139150

VOLUME 2

Part 1

(NASA-CR-139150) GEODYN PROGRAMMERS
GUIDE, VOLUME 2, PART 1 Final Report
(Wolf Research and Development Corp.)
367 p CSCL 22A

N 75-10974

Unclas G3/13 03462

GEODYN PROGRAMMER'S GUIDE

Contract No.: NAS 5-11735 - MOD 65 PCN 550-W-72416

Prepared By:

N.E. Mullins T.V. Martin C.C. Goad N.L. Boulware N.C. Dao M.M. Chin

Wolf Research and Development Corporation Riverdale, Maryland

For

Goddard Space Flight Center Greenbelt, Maryland

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
US Department of Commerce
Springfield, VA, 22151

October 1972



TABLE OF CONTENTS

	INTRODUCTION	Page i
1.0	INTRODUCTION TO THE GEODYN PROGRAM •	1.0-1
2.0	GEODYN ENVIRONMENTAL REQUIREMENTS	2.0-1
3.0	DIAGRAM OF OVERLAY STRUCTURE	3.0-1
4.0	DIAGRAMS OF SUBROUTINE STRUCTURE	4.0-1
5.0	SUMMARY OF SUBPROGRAMS USED BY GEODYN	5.0-1
6.0	SUBROUTINE CROSS REFERENCE CHART	6.0-1
7.0	COMMON BLOCK CROSS REFERENCE CHART	7.0-1
8.0	PROGRAM DESCRIPTIONS	8.0-1
9.0	COMMON BLOCK DESCRIPTIONS	9.0-1

INTRODUCTION

The Programmer's Guide to GEODYN contains the programming details associated with the GEODYN program. This is the second of four volumes which completely document the GEODYN System and is to be regarded as a programmer's supplement to Volume 1, the Systems Description.

The GEODYN program is the heart of the GEODYN Orbit and Geodetic Parameter Estimation System, as it is responsible for estimating the orbit and geodetic parameters for the System.

SECTION 1.0 INTRODUCTION TO THE GEODYN PROGRAM

The major component of the GEODYN System is the program GEODYN. The GEODYN program estimates orbit and geodetic parameters for the System. It possesses the capability to estimate that set of orbital elements, station positions, measurement biases, and a set of force model parameters such that the orbital tracking data from multiple arcs of multiple satellites best fit the entire set of estimated parameters.

GEODYN currently consists of 113 different program segments, including the main program, subroutines, functions, and block data routines. All are in G or H level FORTRAN and are currently operational on GSFC's IBM 360/95 and IBM 360/91.

Due to the large number of block data routines in GEODYN, each has been assigned a unique name. These are, of course, not FORTRAN names, but are rather a device to enable meaningful discussion.

SECTION 2.0 GEODYN ENVIRONMENTAL REQUIREMENTS

Normal operation of the GEODYN program requires a large scale IBM 360 Computer with a minimum of 400K bytes of users accessable core, one 2314 direct access disk unit, two 9-track tape drives, one high speed card reader, and one high speed printer. For some applications, GEODYN can operate with only one 9-track tape drive.

The current GEODYN program is operational under version 19 of the IBM 360 Operating System on the GSFC IBM 360/95 and version 20 on the GSFC IBM 360/91.

For compilation, GEODYN requires an IBM FORTRAN IV
Level G compiler and an IBM FORTRAN IV Level H compiler. A
non-GSFC user should ensure that sufficient space is allocated
for the desired compiler at SYSGEN time to accommodate the
required table space. More efficient operation of GEODYN may
be obtained by use of a Level H compiler with level 2 optimization for all subroutines which are not affected by compiler
size restrictions.

ROOT SEGMENT

MAIN **ALL OTHER SUBROUTINES AND COMMON BLOCKS NOT REFERENCED** - ELSEWHERE IN THIS DIAGRAM 2A **3A ADFLUX NONAME** DRAG1 ORBIT1 STAIF1 BIAS ALIST **BSCOMP DRGBLK** PDEN SUMMRY COEFL **FLUXM** BSCMP1 **EPHEM** PDEN2 **SURDEN** INOUPT **FLUXS CBROWN SURDN1 ESTIM** PREDCT **NEWARC JANTHG** CHARLY ESTIM1 PREDC1 TRUEP PDEN 1 **RFTMCD** COMADJ **PROCES** TRUEP1 **POSVEL** COMAD1 F1 PROCS1 TRUPOL PRNTPR CORREL **GNDTRK** RESPAR TWOSTA SIGBLK COWELL GRHRAN RESPR1 TWOST1 SRFBLK CSTAT GRHRA1 RMSCMP UPDOWN **CSTHET** MOONGR SMSTAT: VEVAL CUVECT OBSDOT SQUANT VEVAL1 DATARD OBSDT1 **SQANT1** VMAT DATRD1 ORBIT STAINE XYZ DRAG **XYZOUT** 2B **4D** 38 2D 30 1D 5D ARCPAR COEF UPDATE DATBSE **GEOSRD PCERD** SIMRO AREAS COM DODDAT COMPAR **CSLIM** DODELM DELTAZ DENSTY DODSRD INDENT **EGRAV** STAINP INTERP **STAPOS** INTRP 18 2E ORB1 REFCOR REFION **SUNGRV** SATCLC SATCL2 TIDAL SATC21 \$ATC22 10 2C ВC 4C 5C START COWCOF POLE **GEODYN AVGPOT** REARG **TYPORB** GEOIDH **FIRST REGION** 2F

BMTWRT

ERROR

REPRODUCIBILITY OF THE

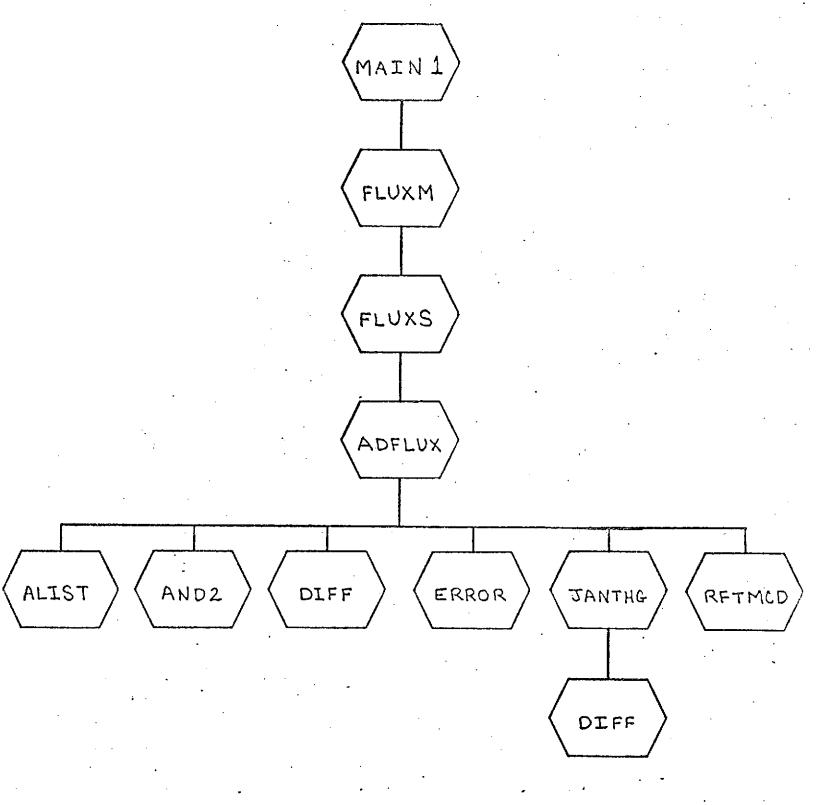
ORIGINAL PAGE IS POOR

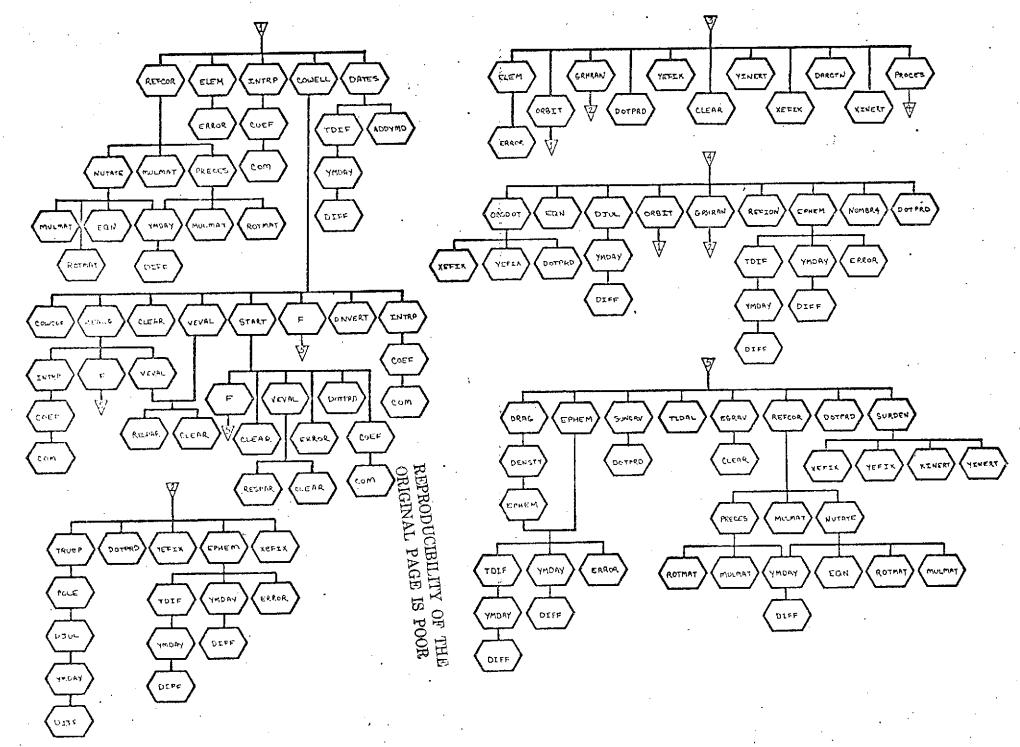
SECTION 4.0 DIAGRAMS OF SUBROUTINE STRUCTURE

On the following pages appear diagrams depicting the subroutine call structure of the GEODYN program. These diagrams show all possible chains of subroutine calls.

MAIN is the executive routine of the GEODYN program. For ease in explaining the subroutine structure MAIN has been broken down into three parts, MAIN 1, MAIN 2, and MAIN 3.

The logic of the diagrams flows down, right or left, but never up. Subroutines which have no extensions from the bottom are on the lowest level. Subroutines may appear at more than one place in the diagrams and, therefore, following a branch backwards does not necessarily determine all subroutines which might call any specific subroutine.





SECTION 5.0 SUMMARY OF SUBPROGRAMS USED BY GEODYN

MATN

Reads and calls subroutines to read GEODYN input cards, determines array sizes for variable storage allocation and acts as a driver for all segments of GEODYN.

NONAME

Serves as a driver for orbit generator and data reduction operations and outputs residuals, ephemeris, and adjustments.

ADDYMD

Adds or subtracts an integral number of days from a date in the form YYMMDD giving a new date in the same one-word form.

ADFLUX

Reads flux cards from GEODYN input deck and adds solar and magnetic flux to stored tables. Writes on scratch file flux information for each arc and the Greenwich mean sidereal time on Jan. 0.0 of the reference year. Counts the number of arcs in the run.

ALIST

Lists the GEODYN input card deck.

ALPMRC

Block data storage of alpha-numeric information used by GEODYN print formats.

AND2

Two byte integer 'AND' function.

APPER

Computes apogee and perigee heights of a satellite.

ARCPAR Loads individual arc parameters into variable storage arrays.

AREAS Computes the ellipsoidal surface area lying between two fixed latitudes and two fixed longitudes.

AVGPOT Computes the average gravitational potential of the Earth using only even zonal harmonic coefficients.

BIAS Extracts bias start and stop times from data and counts biases.

BMTWRT Writes out the B-matrix.

BSCOMP Computes electronic biases and corrects normal equations for extraction of the electronic biases.

CBROWN Passes variable storage arrays to the subroutines using them.

CHARLY Allocates core for variable storage arrays.

CLEAR Clears an array of four-byte integers.

CLEAR2 Clears an array of two-byte integers.

COEF Computes interpolation coefficients.

COEFL Lists non-zero gravity model coefficients of the spherical harmonic expansion of the geopetential used by GEODYN.

COM Computes binomial coefficients.

COMADJ Prints adjustments to common parameters.

COMPAR Loads common parameters into variable storage arrays.

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

CONSTS

Block data storage of input/output file numbers, integrator stepsize information, conversion constants, and Earth parameters.

CORREL

Computes and prints correlation coefficients from above diagonal of normal matrix stored in vector form.

COWCOF

Assigns integrator coefficient values (orders 5-15).

COWELL

Integrates satellite equations of motion and force model partial derivatives to desired time.

DATARD

Stores, updates and retrieves individual arc parameter information.

DATBSE

Retrieves observation data from DODS Data Base.

DATES

Converts days elapsed from Jan. 0.0 of the arc reference year applying the transformation from the A.1 time system to the UTC time system, into a three word date of the form YYMMDD, HHMM, SEC.

DAYEAR

Converts a date from the year and number of days from Jan. 0.0 of that year to integral days and fraction of a day in integral seconds. Outputs the date in the form YYMMDD.

DELTAZ

Computes the z-coordinate of a point of given latitude on the ellipsoid.

DENSTY

Computes atmospheric density based on the Jacchia-Nicolet model (height and temperature dependent).

DIFF

Calculates the difference between any two time points in the 20th century. Input date is two words in the form YYMMDD and HHMMSS; output date is integral days and seconds of a day.

DINRAD Converts angles expressed in arc measurements or time measurements to radians.

DOUBLE-precision matrix inversion using
Gauss-Jordan method of condensation with partial
(column) pivoting. No restrictions on dimension of matrix.

DODELM Retrieves satellite orbital starting elements from DODS Data Base.

DODSRD Reads observation data tapes in DODS format and and partially preprocesses the observations.

DPFCT Computes arctangents, denormalization factor for geopotential coefficients, Julian dates, and dot products. Computes Earth-fixed x and y from inertial x and y, and inertial x and y from Earth-fixed x and y.

DRAG Computes accleration in rectangular coordinates of a satellite due to aerodynamic drag forces.

EGRAV Calculates acceleration in rectangular coordinates on a satellite due to geopotential forces (spherical harmonic terms to maximum degree and order 30).

ELEM Converts inertial position and velocity vector to osculating orbital elements.

EPHEM Reads and interpolates lunar, solar, and planetary ephemerides and the nutation in right ascension. EQN Computes nuttaion in longitude, obliquity, and right ascension, and the true obliquity of date.

EQUATR Rotates a vector from the mean or true equator and equinox of one epoch to the mean or true equator and equinox of another epoch.

ERROR Prints specific error messages when the run is abnormally terminated.

ESTIM Estimates correction vector to state vector using the method of Bayesian least-squares.

F Evaluates the satellite acceleration vector and force model derivatives.

FLUXM Blockdata storage of magnetic flux data through January 1972.

FLUXS Blockdata storage of solar flux data through February, 1972.

FMODEL Blockdata storage of the coefficients of the spherical harmonic expansion of the geopotential.

GEODYN Blockdata storage of date and source tape number of this version of GEODYN.

GEOIDH Positions surface density locations on geoid surface and computes matrix of constraint for density adjustment.

GEOSRD Reads observation data in GEOS format and partially preprocesses the observations.

GRHRAN

Computes the right ascension of Greenwich and the satellite vectors used in computing measurement partials.

INDENT

Computes Cartesian coordinates and areas of surface density blocks.

INOUPT

Reads GEODYN input cards. Outputs run and arc descriptions. Calls subroutines to read data tapes.

INTRP

Interpolation routine.

JANTHG

Selects the Greenwich mean sidereal time on Jan. 0.0 of the reference year for each arc and selects flux data for each arc from block-data storage. Computes average solar flux values for each arc.

MULMAT

Multiplies three 3x3 matrices.

NEWARC

Initializes switches and constants for each arc.

NUMBR2

Searches the entries of an array of 2-byte integers and compares them with an input number or bit configuration. The index number or location of the entry matched is returned. If no match is found, zero is returned.

NUMBR4

Searches the entries of an array of 4-byte integers and compares them with an input number or bit configuration. The index number or location of the entry matched is returned. If no match is found, zero is returned.

NUMLOC

Searches the entries of an array and compares them with an input number or bit configuration. Index numbers or locations of the entries which match and the number of such matching entries are returned.

NUTATE

Generates nutation angles to transform a vector from true equator and equinox to mean equator and equinox.

OBSDOT

Calculates time derivatives of requested observation types. (Observation types available: 1 - right ascension and declination; 2 - range; 3 and 4 - range rate; 5 - 1 and m direction cosines; 6 - X and Y angles; 7 - azimuth and elevation).

ORBIT

Returns satellite state (position and velocity) and force model partials at the called time.

ORB1

Generates a satellite ephemeris tape in ORB1 tape format.

OUTRAD

Converts radians to degrees, minutes and seconds or to hours, minutes and seconds.

PCERD

Reads PCE format data.

PDEN

Prints adjusted surface densities.

PDEN1

Prints input surface densities.

PLHOUT

Converts tracking station location and variance-covariance matrix in geocentric rectangular coordinates to geodetic latitude, longitude and height. Computes partial derivatives of the geodetic coordinates with respect to the geocentric coordinates.

POLE

Selects from a table, for a given input date, the coordinates of the true pole.

POSVEL

Converts osculating orbital elements to inertial position and velocity vectors.

PRECES

Generates the matrix for precession from mean equator and equinox of one epoch to mean equator and equinox of another epoch.

PREDCT

Computes measurements, residuals and measurement partials.

PROCES

Completes the preprocessing of observation measurements.

PRNTPR

Prints the requested observation preprocessing.

RANDOM

Unblocks and reads observations from a random access file. Blocks and writes observations on a random access file.

REARG

Rearranges the back value arrays when the integration step is changed in variable step mode.

REFCOR

Precesses and nutates a vector between the true equator and the equinox of a reference time to the true equator and equinox of date.

REFION Dummy ionospheric refraction subroutine.

RESPAR Calculates the partials of geopotential resonance coefficients requesting adjustment.

RFTMCD Checks an 80-character alphanumeric string to determine if the first 6 characters are numerals and the remaining 74 characters are blank.

RMSCMP Computes RMS, random normal deviate, and mean from summed information.

ROTMAT Generates a rotation matrix from an angle and axis of rotation.

SATCLC Applies satellite clock corrections to GEOS 1 optical data.

SATCL2 Applies satellite clock corrections to GEOS 2 optical data.

SATC21 Part 2 of satellite clock corrections for GEOS 2 (SATCL2).

SATC22 Part 3 of satellite clock corrections for GEOS 2 (SATCL2).

SIMRD Reads simulated data tapes.

SMSTAT Sums statistics.

SQUANT

Converts station positions to geocentric rectangular coordinates on the first call. On subsequent calls, converts station positions to latitude, longitude and height. Computes partials of the rectangular coordinates with respect to latitude, longitude and height.

STAINF

Computes statistical information at the end of each inner iteration for each arc and at the end of each outer iteration for all arcs. Corrects statistical information for electronic bias compensation.

STAINP

Reads input station positions. Determines whether position was input in rectangular of spherical coordinates, converting to spherical whenever necessary and stores those station positions to be used in arc.

STAPOS

Blockdata storage of station positions.

START

Starts the integration process using interpolator formulas and iterating until desired accuracy is obtained.

STORE

Stores common and arc information on disk.

SUMMRY

Prints arc statistical summary.

SUNGRV

Computes the acceleration in rectangular coordinates on a body in orbit about a central body due to the gravitational attraction of a disturbing body. (Includes the moon, sun, Venus, Mars, Jupiter and Saturn.)

SURDEN

Computes the gradient of the potential due to surface densities, and the partials of the gradients with respect to the surface densities for those densities to be adjusted.

SYMINV

Symmetric matrix inversion.

TDIF

Computes time differences between systems A.1, UTC, UT1 and UT2.

TIDAL

Computes acceleration due to solid Earth tidal bulges caused by lunar and solar gravitational effects on the Earth.

TRUEP

Rotates tracking station coordinates to account for polar wandering.

TWOSTA

Computes measurements and partials for VLBI and average range rate data.

TYPORB

Prints arc summary page.

UPDATE

Updates are adjusted parameters to compensate for adjustments to common parameters.

UPDOWN

Computes uplink and downlink transit time for average range rate data or the two downlink transit times for VLBI data.

VCONV

Converts variance-covariance from one system to another.

VEVAL

Computes the variational partials of force model parameters.

YMDAY

Computes for a given date the number of days from Jan 0.0 of the reference year for the arc.

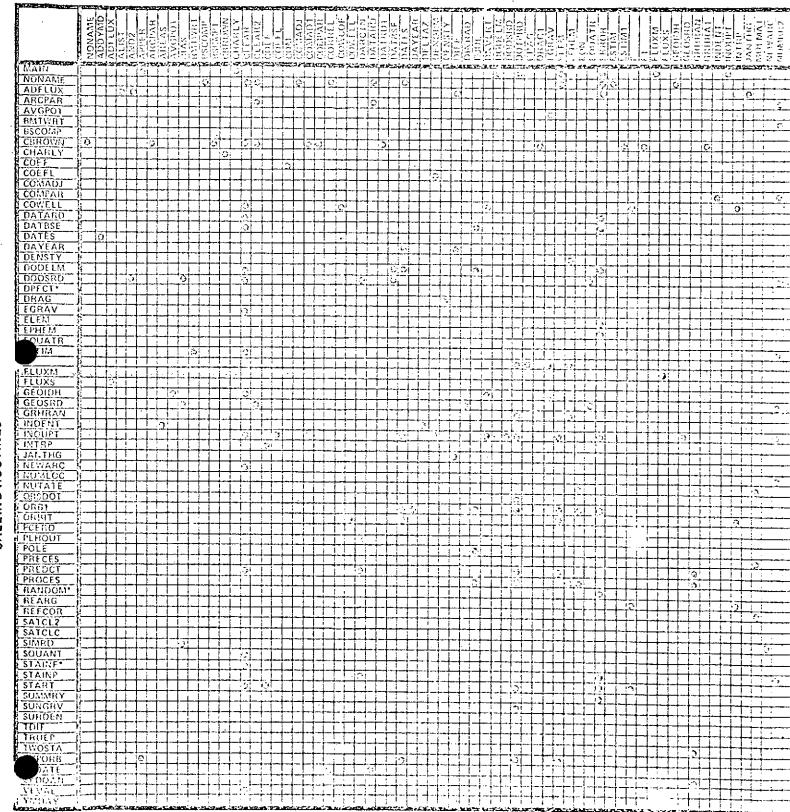
5.0-11

SECTION 6.0 SUBROUTINE CROSS REFERENCE CHART

A cross reference chart of the subroutines used by the GEODYN program is given on the following two pages. The calling routines are listed down the side of the page and the called routines are across the top.

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

CALLED ROUTINES



*The starred routines have more than one entry point.

CALLED ROUTINES

																_	∪ (4.)	L L L		100	, , ,	19 1	ب.	_														
production of the same of the						SI.		1-1-	1 5	- J						2		9 a	-	2. U	NO.	-	<u>. </u>	-20			<u>}</u> :	7675		: —i	$\overline{}$	1	i	i i	Ξĺ	-		
		NUML OC	SP			2 ± 2 ±	기본	2			7.00	HADEFS I		HARDING HANNAR	2001	-1,			01MA	A1022 A1010	5			AIF	TAILS IN	A 12.	200			= =		1.03.1A	- SS-	1000.00	2	4 4 2 2		
MAIN	CHI (A	2 & SERVE	واعظ	CP41	ं है। संख्या	يقعت	 	יייאני.		- 51 - 12 372		TO EL	_ 	2) 2 24 22	Z Z		درنج اکارج				1000		C - 1		ijši, Per	رابال: حصعة،	(F)		-		750			****	-	> ニニ		. :
NONAL	18		9	131		1			+		ان		- -	2 0	1		士							_ _	,+-	Ħ	5			<u>.,</u>		0			甘		士	<u>i : </u>
ARCPA	R	-					士		+-				H	+	-	-+	┽	익-			-+	+	+	\dashv	+	H		\dashv			-			+	+	\dashv		
EMTWE)T ₹Ť			1-1	-		4-			+		-	H	-	-	-							- -			1-1-		11		1	H			↓	;		Ħ	
BSCOM CBROW			- 0		-	-	7		\Box		1		<u> </u>		#		1					††		:3	11			11					- ا ن	11		0	++	1 :
CHARL			1				#						Ϊ				11	+-					_ C	\Rightarrow	\Box	 		11					1			Ť		
COEFL					+						\pm			+	_			_ 				出		\perp									\pm	4-4-				<u> </u>
COMPA	íł.	0 0	+	1-1-			<u> </u>	<u> </u>	<u> </u>		-				-		1					<u> </u>	-	\pm			+	+	0					-	5	1-1	++	<u>'</u>
DATA		+		H	\dashv	+	+	+	+-	++	+	-	+		2		T		-			+-	-			ing.	1				H	1-1	-	1		31	++	<u>; : </u>
DATES			-						-	$\overline{+}$	-		H		-								-	_			H	\Box		0	H						-	
DAYEA	\R			\square					$\overline{+}$		\mp		H		#		1	1-1				\Box		7		1-1-	\Box	\Box					+				1	
DODE	1.5		1	1-1	+-		#		\Box		1		Ìţ	+			#										計	+			1-1-		<u> </u>					
DPFCT		1			11		+-		1-1-		1		 				+	_					_	1				++		9		$\pm \pm$	-			11	++	
EGRAV				<u> -</u>			\pm				土			- -	\pm		1						-	_	1-	+			- -				\pm				++	
S ELEM	1		\pm			-	-		++	++			-	+	+		+	╅				+		-		\dashv	╁┼	++		51	-		+	+	-	╅╅	++	
EPHEM EQUAT ESTIM	R	0				-	- -			-[2]	-		-														-	\Box			-		-	-				
F FLUXS	.1	i- -	-	+	-	-		-			-		H	+			+						-[-	-		1	1-1	25	-†~! -	1		-	+	H				1 .
¥ FLUXS GEOID					-		+			1	-	-	П		1		-					- -	4		1-			\Box		 		-	i			+	++	
GEOSR GRITE	D						-		#		+			7.	#	-	#	-1-					- -	1	1					3	 		$\stackrel{\cdot}{=}$	<u> </u>				
NDEN	Ť	-	-		Ħ		-			11			H		1							- -		- -	++					- -			_ <u>-</u> ;	11	∔}- ∔ -		1	
HATTEP.				++			- -				1			•	1		\perp					. 		1		1				<u> </u>	-	$\dot{\Box}$	_		H			
HTMAL	₹C				+		\pm		廿		+				1		\perp	- -				#		_		+						-				++	++	1
NUMLO	E		<u> </u>	廿	+		<u> </u>		++					\pm								\pm	-	+		-	\vdash				\Box	++	<u> </u>			$\pm \pm$	+ +	
08800 0881	<u>r</u>									++	\pm	-	-	-	+		+ 1				1	! !			1 1	-	++		-	-		-	Ŧ		H	1	7	<u>}</u>
PCERD			+	++	+		-	-	++	++	-		H					+		-	H		1			+-	1-1		Ŧ	- -	-	\Box	-	1		11	1 -	
PLHOU	IT		-	\Box	Ŧ		-		-	77	+	H	H		\mp	\Box	\Box			-	-		+		++	\Box	H			1			+	 - -		++	ij	
PRECE						\mp	+	1-+	++	11	1		1	\Box	1			-	3.						1	11	1-1						#					
PROCE	S		2				1			#	#	T			-	,=										 	 	11					+	 				
REFCO	3			#	-			H	1+		-				+		+-!							1		廿	-	1				+	+	Н.	 		1 :	;
SATCL	7			\coprod	Ť	\pm	\pm		††		İ	-		-	\pm					-				\pm		++				-			1				11	
\$ATCL SIMRD				++		-			+-		+		-	- 1	_	-			-					<u> </u>	+-+-	 - -			-	-	+		+	╁	\prod			
ALUOZ.			-			-	-): 			-	1		\dashv	H	+	- (-	+			+				-	\Box		-		H	\square	7			- -		
STAIN	P			-	+	+		\prod	$\overline{\Box}$	+	+	-	-		+-		П		-			\prod			+-			11	+	1	-		#	1-	H		#	
SUMM	ξY			\square				H	-		-	H			_		\Box	-			П					1-1-	-					-	\downarrow				\exists	
SURDE							1				1		†+		‡								$\dot{\mp}$							 		+		+	-	1=	<u>-</u> - .	~~~~
TRUEF		二	Ļ				- -	- -				Η.		十	#	片		_							11	##		$\downarrow \downarrow$			-	#	1	<u> </u>	士		++	1
TWOST	18		2		-			\Box	廿		-		扗	-	\pm	\Box					H.		1		#	╁		\coprod			H	+			1	+	1	1 1
UPDAT UPDOV	724		士		<u>.</u>				+	-	\pm		Н		\perp	\coprod		-			-+	- -	+	1		<u> </u>	\vdash			- -	П		-	-	+-+	\Box	+	
VEVAL	Ϋ́		+	+				H	H		+	1	H	-	\mp	H					H		1		++	H	H	\blacksquare			-		+	+	\Box	-	11	
		e.alcu		A PER	avisos.	35. 32%	A-51	****	APPLY -	erier i	T)(E	- Er land		* 7-2	ALI (A)	thank)	لدامي		7 Ja.	J.		*	C116		Z. ZMŠd	care		K/E0.		and a	100		***			acari.	**	

^{*}The starred routines have more than one entry point.

SECTION 7.0 COMMON BLOCK CROSS REFERENCE CHART

On the following page is a cross-reference chart showing the common blocks used in the GEODYN program and which routines use them. The subroutines are listed down the side of the page and the common blocks are across the top.

SUBROUTINES

7.0-0

REPRODUCIBILITY OF THE

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

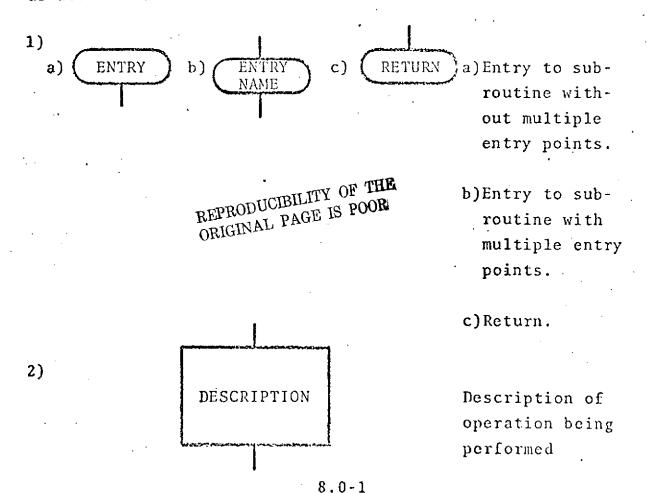
SECTION 8.0 PROGRAM DESCRIPTIONS

The functions of GEODYN and all of its subroutines are described within this section.

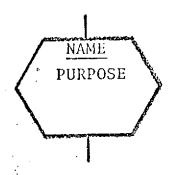
The listings of the GEODYN program and each of its subroutines have been thoroughly described with internal comment cards. All COMMON storage variables used by each subprogram are described in Section 9.0.

Flowcharts

This document uses the flowcharting systems developed for the NONAME documentation. This system utilizes only six basic flowcharting symbols. The symbols and their uses are as follows:

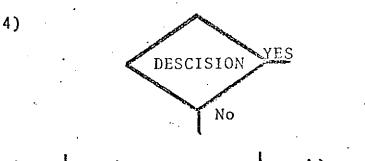




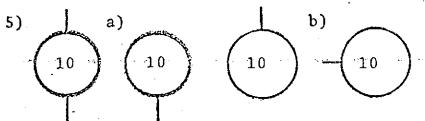


Subroutine or function call where:

NAME - Subroutine called PURPOSE - Description of the purpose for the call.



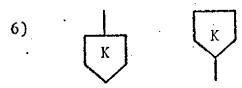
Decision



a)Statement number.

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

b) Transfer to statement number.



Off page connector.

In this new flowcharting system logic lines flow down, right, or left but never up. The only way for logic to travel opposite to the flow is to transfer to a statement number which appears earlier in the flow of logic. At times, statement numbers are not available for back transfer. In these cased, an alphabetic name or character may be inserted in the line of logic at the point to which return of logic flow is desired. The name or character inserted must appear within symbol 5.

This flowcharting system has been designed to correlate as highly as possible with the program listings. The statement numbers used are the same as those used by the FORTRAN program and the description boxes contain the same information as the comment cards appearing in the program.

Programming Technique

This section is included as a further aid to programmers working with the GEODYN program and describes in general terms some of the techniques used in the programming of GEODYN.

Array and scalar names in GEODYN have been chosen in such a manner as to be meaningful. The following are some examples of naming in GEODYN.

NAME	SUBROUTINE	MEANING
PRDMIN	NONAME	Satellite period in minutes.
NARCS	NONAME	Number of arcs in run.
LOUTER	NONAME	Last outer iteration switch.
RATIO1	NONAME	Ratio to sigma for first
		measurement.

NAME .	SUBROUTINE	MEANING
ORBELP	NONAME	Keplorian orbital parameters from previous iteration.
THETG	PROCES	Greenwich Hour Angle in radians.
CLATG	SQUANT	Cosine of station geodetic latitude.
NODEGF	STAINF	Number of degrees of freedom.
TWOPI	TDIF	Two times π.
MJSTOP	DATBSE	Modified Julian date of stop time for data selection.
VAR	COWELL	Switch for variable step integration.

The GEODYN program has been broken into many subroutines in order to optimize its use of core storage and also its efficiency. Many of the smaller subroutines are conversion routines which are called by many different segments of the program. Large portions of the GEODYN program are input/output subroutines which have been designed to give the user maximum ease in setting up the program.

GEODYN also uses a very large amount of COMMON storage. COMMON is used for five primary reasons by GEODYN.

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

- 1) To pass information between subroutines.
- 2) To store program constants.
- 3) To set switches for subprogram reinitialization.
- 4) To overlay storage requirements.
- 5) To load block data.

GEODYN uses two additional core saving techniques:

- Linkage Overlay
- Variable Core Allocation

Linkage Overlay

GEODYN uses a complex overlay structure to reduce the effective program size by nearly 300K bytes. A diagram of the GEODYN overlay structure is provided in Section 3.0.

In reference to the Diagram of the Overlay Structure, the overlay segments are utilized as follows:

SEGMENT	FREQUENCY OF USE
ROOT	Always in core.
1A	Once per job.
3A	Once per job.
1D, 2D, 3D, 4D	Maximum of one of these per arc.
1E, 2E	Maximum of one of these per arc.
2A	Once per job.
1B	Once per job.
2 B	Once per outer iteration.
3B	Once per outer iteration.

SEGMENT	· -		FREQUENCY OF USE							
1C		•	Once per inner iteratio	n.,						
2C		•	Once per inner iteratio	n.						
3C	r		Once per inner iteratio	n.						
4C		•	Once per outer iteratio	n per arc.						
5C			Once per outer iteratio	n. •						
1F			Once or twice per arc.							
2F	٠,	•	Once per arc maximum.							

Variable Core Allocation

GEODYN counts the input parameters and allocates the minimum array sizes required to process each job.

As a result of this:

- Orbit generator arcs may require as little as 330K, and
- Data reduction arcs as little as 350K or as much as the entire capabilities of the GSFC IBM 360/95, depending on the user input requests.

On the following pages of this section appear the descriptions, program listings and flow charts for the GEODYN program.

The programmer should note that many of the GEODYN subroutines have more than one entry point. In general the purpose of these multiple entry points is to pass to these subroutines the starting locations of those arrays which are variable storage and to also set the dimension of these arrays.

MAIN

DESCRIPTION

- Calls program initialization subroutines.
- calls FLUXM to list input cards, read flux cards and set up flux arrays.
- Reads run title, reference time, epoch and element cards.
- Calls INOUPT to read and print a description of the common and arc parameters.
- Calls STORE to store common and arc parameter information.
- Calls DODELM to obtain elements from DODS data base when necessary.
- Calls epoch element conversion routines when necessary.
- c Calls APPER to calculate apogee and perigee heights.
- Calls CHARLY to allocate core and begin processing.
- Calls ERROR to print error messages when necessary.

0N05

ONDS ONDS

3.402

SONG

0405 0805

омоs гсио

0405

0805

0NOS 0NOS

0NOS 20И0

0NOS 0NOS

0NOS 0NOS

0N05 0N05 0N05

0N05 0N05 2: 2:

2 2

2:

3:

3 3

3

3 3

3

3 3

Ċ,

4

۵

۷.

41

REPRODUCIBILITY OF THE GINAL PAGE IS POOR

NAME '	MAIN			•
PUFPCSd	1) TO READ AND TO GEODYN INFUT CARD 2) TO DETERMINE A ALLOCATION 3) DRIVER FOR ALL	S ARRAY SIZES FO	R: VARIABLE	
SUERCUTINES LIED	TDIF NEWARC ERROR DCDELM CHARLY STORE	POSVEL APPER ELEM	FLUXM INDUPT	YMDAY DOTPRD
CCMMCN BLOCKS	INITAK INTALK ALPMPC APAPAM PRIGRI CONOUT	TPEBLK CPARAM	CTIME CSTINF	PREBLK CELEM
INFUT FILES	FLTP - FLUX DATA INTP - GEODYN IN			•
OUTPUT FILES	PRINTER			

IMPLICIT REAL (8(A-H.O-Z)
DIMENSION ICCRE(30)
PATE NO 11 5 401 4
REAL APLN (CONVRG. OUTCON, R WSALL (ATTIME) EDITM, REINDX, SIGCHG.
VARCOV RMSTOT TOTE
TO TELLET VERTUNIDERPOR
LUGICAL CHOGPR.DELEM.LITPES.INITAL.TOREFT.ORBTSW.MISLOG.VARSTP.
IN MECH HYDEC
INTOGER ADDRISEADIARCHO.ESTSTA.OUTP.DATP.XYZTP.RVIP.PEUIP.SCRA.
erun, settp. GROTP.ESTSTA.RECNE.APORAPER
INTEGERAS TEREPRATADAREATATYPEATSTADACULLAMTYPEANMEASAPRETYPA
. CHANEL JPASE
LOUBLE PRECISION LOVE
PROBLEM 187PFF (2)
A THE SEAL ATTRIBUTE BY MO. I SPHEAREDSEC, IYRSE, INNEAX, INNEIN, CONVING.
• ORDEL (6.2) -ECITN, INSUPR. (CSAT(2) - ORBITS J. (XYZSW(11) - MISLOS(9)
COMMUNITABLE TO TOCHTON (50). OF DER (2.2). ASAT (4). VARSTP(2). HLVDSW(2).
· NEON(2), ADOR(2,3), LOVE(A)
COMMONITE COLKZINTO, CUTP, DATP, XYZTP, KEPTAP, RYTP, PLOTP, 1085, SCRA,
• SCRC.FLTP:COOTP
COMMUNICITY CONTROL CAYREF, DSTART, DAYSTP, DAYINT, DORBIT, CAYEND,
. DAATE.COR51.DOR915.ORERT.IYEEG
COMMUNIPREBLE ZUAYSTA . DESU1 . DESC2 . S1 31 . 3 . G2 . SRFNDX . I STA . MTYPE .
. NMCAS . FRETYP(2) . CHANFL . VHECHN . PREPRO . RECNO
COMMENZAL FME CZAL PHA (54) , HYPER
CUMMUNIAFARANINGAS, INPART, NELAS, ESTSTA, NSAT, NGPARC, NORECLA
NPARAM NETASH MPAR
COMMONICE FRANCHSTA INMAST INSTEST MAXIMAR INC. 45 NGPC1 NGPC1
. NOPCCM INCSEST, CAPGRALLING LUCASMINDENTINGENTINGENTION
. INHERSHANCONSTANDOONS
CUMMUNICATINE ZUBASE (5561) LBASE

55

37

58

59

50

61

52

53

57

55

69

70

90

84

57

Ç.

ċ

9

ç

ONOS

2 CMO

0N05

2CM0

SCPO

ONDS.

ONOS

ONOS 10

0NUS 10

0NOS 10

0NOS 10

0NOS 10

0NOS 10

ONOS 10

ONUS 10

0NG5 16

2NOS 10

0N05 11 **0**HOS 11

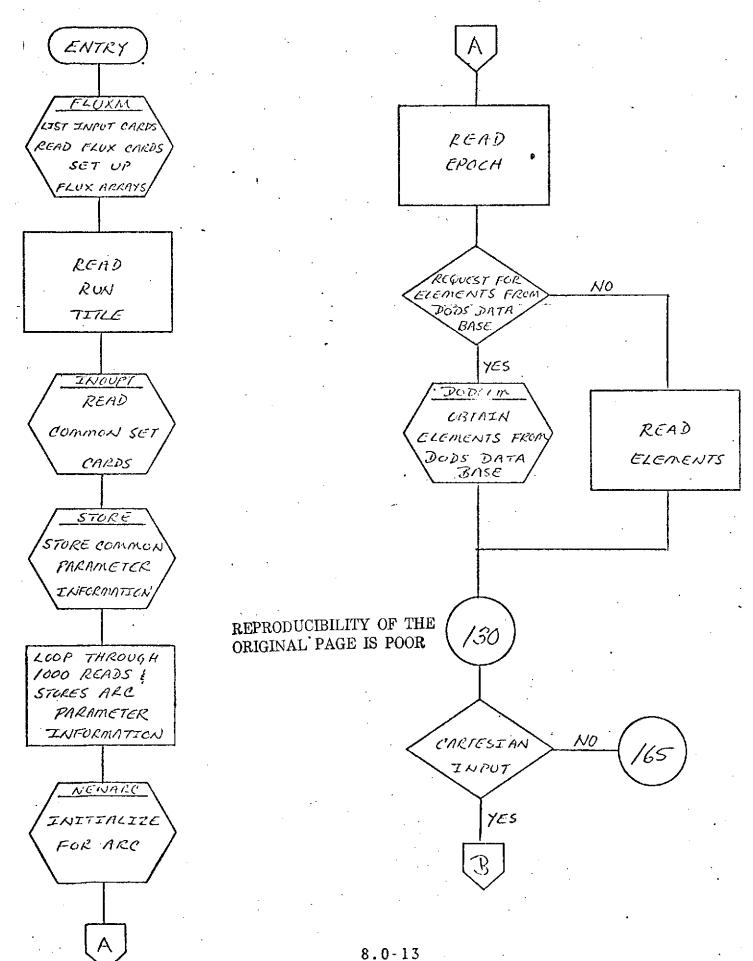
```
0NDS
      CUMMUNICELEMIELEMST(6,2), ORBELA(6,2), XNU, EC, RMSTOT
                                                                              0NOS
    COMMON/PRIDRIVELEMIN(6.2).VARCEV(6.5.2).TITLE(30).DRAG(18)
      CUMMON/CCADUT/EMSALL.OUTCON.MINOUT.MAXOUT.LITRES.MAXSAT.MAXZIN.
                                                                              0005
                                                                              ONOS
       " NOTART NEGRMX . I VAR . I CRUER . N FRCS . NSTARD . L START (6)
                                                                              0N05
      LATA INTCCR/O/.NEBTAS/O/
                                                                              ONOS
      A1T1ME(CAYREF)=T01F(4.3.DAYREF)/8.64E4
                                                                              ONDS
C READ INPUT CARDS, READ FLUX CARDS & SET UP FLUX APRAYS
                                                                              0N05
      CALL FLUXF(NAFCS)
                                                                              ONUS
C READ RUN TITLE
                                                                              0N05
      BUTIT (00001, FRAI) CABR
                                                                              ONOS
      NSAT=2
                                                                              ONDS
      LBASE=0
                                                                              ONOS
C READ COMMUN SET CARDS
                                                                              0NO5
     CALL INDUST (NARCS.0)
                                                                              0NUS
C STORE COMMON FARAMETER INFORMATION
                                                                              0NDS
      CALL STURE ( . FALSE . . TPUE . )
                                                                              0N05
     - NGPCCM=NCSEST
                                                                              ONUS
      ATTOENENT TOST INDENST-RCCNST
                                                                              ONOS
      OUSUPR = I NEUPF
                                                                              ONDS
      RMSALL≃RMSTOT
                                                                              ONCS
      NGPC 2= 0
                                                                              ONOS
      MAXSAT=1
                                                                              ONOS
      MAXPAR=0
                                                                              COMOS
C LOCP THROUGH 1000 READS & STORES ARC PARAMETER INFORMATION
                                                                              0NOS
      DD 1000 ARCHD=1.NARCS
                                                                              ONUS .
C INITIALIZE FOR ARC
                                                                              ONDS
     SCALL NEWARD
                                                                              0N05
      FEAD(INTP-10000) TITLE
                                                                              ONUS
      READ(INTF.100C1) IYREF
                                                                              ONOS
     - 1Y5EG=1Y8EF/10000
                                                                              ONOS
      DAYREF=YMCAY ( TYREF . 0 . 0 . EO)
                                                                              0N05
      DAYREFSEATREF+AITIME(DAYREF)
                                                                              ONDS
C READ EPUCH CARD
      READ(INTF.10001) ISPYMD.1EPHM.EPSEC.INNMAX.INNMIN.CONVRG.IGEOS.
                                                                              0NDS
          IYND. IFM. SEC. IYMDD. IFMD. SECC. NSAT. IELW. J. ISATID
                                                                              ONDS
                                                                              ONDS
       DELEM= J. GT. O
                                                                              ONDS
       IF(DELEM) NSAT=1
      NSAT=MAXC(1.MINO(NSAT.2))
                                         REPRODUCIBILITY OF THE
      MAXSAT=MAXO(MAXSAT, NSAT)
                                         ORIGINAL PAGE IS POOR
       MTYPE=1ELF
       IF(IYHUD. GT.O) GO TO 100
       OMY 4 = I = OCMY1
       MH REI = CKHI
       SECU=EPSEC
  100 CATAEP=YMCAY(IYMDD. IHMC.SFCC)
       CATALP=CATAEP+AITIME(CATAEP)
       INNMIN=MAXO(1.INMMIN)
       (1:XAMMAI)OKAM=KAMMAI
       IF(CUNVRG.LE.O.O) CONVFG=0.02
       CAYSTP=9555.000
       IF(IYM3.EC.0) GO TO 120
       CAYSTHEYMEAY ( TYNO; THM; SEC )
       CAYSTP=DAYSTP+AITIME(DAYSTP)
  120 OSTART = YMEAY (TEMYMO . 15 PHM . EPSEC)
       DSTART=UEIAPT4AITIMF(OSTART)
C DOTAIN ELEMENTS FROM DODS DATA BASE IF REQUESTED
```

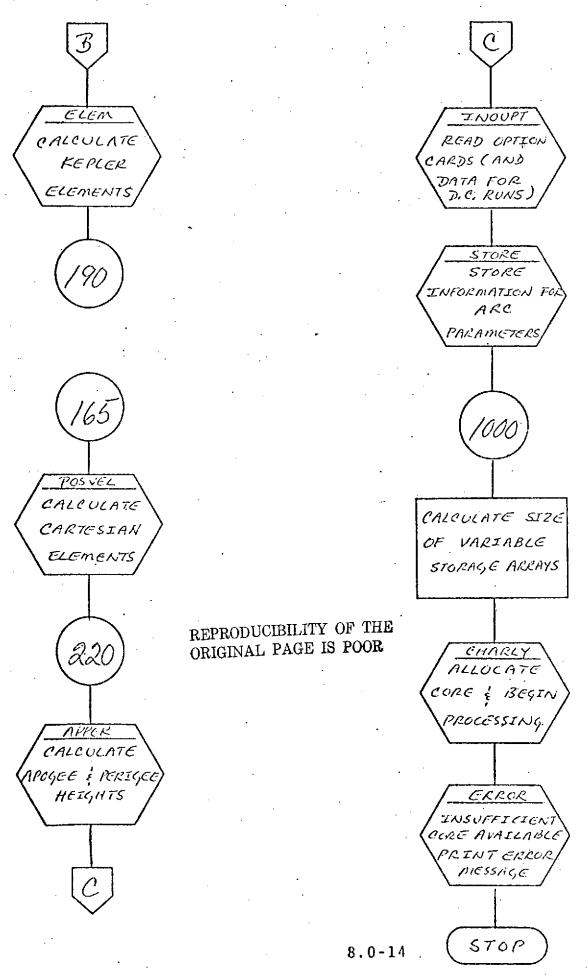
```
9NOS 112
      IF(DELEM) CALL DODELM(IELF.ISATID.DSTART)
                                                                             E11 2CHO
     HYPER= . FALSE .
      IHYPER(1)#0
C READ ELEMENTS
      IF(.NOT.EELEM) READ(INTP.10002) ((ELEMST(J.1),J=1,3).IHYPER(I).
         (ELEMST(J+1)+J=4+6)+I=1+NSAT)
                                                                             ONOS 118
      CO 200 15#T=1.NSAT
                                                                             ONDS 119
      HYPER=HYPER.CR. IHYPER ( 1SAT) .GT.O
                                                                             0405 12C
     , IF(IHYPEH(ISAT)-1) 130.140.165
  130 -1F(DOTPRD(ELEMST(A, ISAT), ELEMST(A, ISAT)).LT.DFLDAT(3±350±±2).AND. 040S 121
         DAGS(ELEMST(2.ISAT)).LT.1.000) GO TO 165
                                                                             ONCS 123
C CAUCULATERKEPLER ELEMENTS IF INPUT IS CARTESIAN
                                                                             0NOS 124
  140 CALL LLEW (STEMST(1.ISAT).CROSLA(J.ISAT).1..TRUE..TITLE)
                                                                             0405 125
      60 TO 190
                                                                             0ND5 126
                                                                             01105 127
      DO 175 I=1.6
      GRUELA(1.15AT)=ELEMST(1.15AT)
                                                                             0NOS 128
175
C CALCULATE CARTESIAN ELEMENTS IF INFUT IS KEPLER
                                                                             0NUS 129
      CALL POSVEL(ELEMST(1.1SAT).GRBFLA(1.1SAT).1)
                                                                             0475 130
  190 CC 200 I=1.5
                                                                             0NOS 131
      ELEMIN(I.ISAT)=ELEMST(I.ISAT)
                                                                             DNOS 132
      DRUEL(I.ISAT) = DRSELA(I.ISAT)
                                                                             DNOS 133
       IF( NUT + HYPER) GU TO 220
                                                                             CNDS 134
       DRINT 10003,ARCHU
                                                                             0NOS 135
       CALL ERRER(10 LUVE)
                                                                             ON#5 126
C CALCULATE APCCHE & PERIGEE HEIGHTS
                                                                             0935 137
  220 CALL APPLE
                                                                              ONUS 132
       INSUPR = CL SUPR
                                                                              0NDS 139
C READ OPTION CARDS (AND DATA TAPE FOR D.C. RUNS)
                                                                              ONOS 140
       CALL INDUST(ICEUS, APCNC)
                                                                              0ND5 141
      · NEULAS=MA)O(NEBLAS: NBIASE)
                                                                              0NJS 142
       NGPC1=900-NGFARC
                                            REPRODUCIBILITY OF THE
                                                                              ON 15, 113
       NGPC2=MAXC(NGFC2+NGPC1)
                                                                              0NOS 144
                                            ORIGINAL PAGE IS POOR
 C STURE INFURMATION FOR APC PARAMETERS
                                                                              0NDS 145
       CALL STORE( FALSE ... FALSE .)
                                                                              0NOS 165
       MBIAS=MAXC(MBIAS+NBIAS)
                                                                              0108 147
       NEUNMX=MAXO(NEGNMX, INPARI +NGPC1)
                                                                              0NUS 149
       KUREFU
                                                                              0NOS 149
       CO 400 I=1.NSAT
                                                                              2NJS 153
       K = 0
                                                                              CNDS 151
       IF(.NDT.CRBTSW) K=6+NEGN(I)+NGRC1+NGPCDM+NTIDEN
                                                                              ands 152
                                                                              0NOS 153
       IF(VARSTP(I)) IVAR=2
   400 KURE#KURE45*IVAR*((CRDER(I+1)-1)+K*(URDER(I+2)+1)]+(IVAR-1)*(1+K) 0N05 154
                                                                              0405 155
        INTOUX=MAXO(INTOUR, KORE)
                                                                              0405 154
  1000 FAXPAREMASC(MAXPAR + NOTAS+ INPAR 1+NGPC1)
                                                                              0NCS 157
        MAXPAR =MRXPAR +NCSEST+NMAST*3*MT10EN
                                                                              0NOS 153
        NEONNX = NECKMX + NT IDEN + NCSEST + 1
                                                                              0NDS 159
        MOTAS=MOTAS+MOD(MBTAS+2)
                                                                               0NOS 160
        NGHC2=NGFC2+MC0(NGPC2+21
                                                                               2403 151
        NCSEST = NCSEST +NGPC2
                                                                               0105 162
        NGPC1=NGFC2+1+MBIA5+3*MAXSAT
                                                                               0NOS 163
        NGHCZ=NC365T+KATAS+3#MAXSAT
                                                                               QNCS 154
 C CALCULATE SIZE OF VARIABLE STORAGE ARRAYS
                                                                               0435 153
                                                                               0935 100
  C BSTRT.US_NO.ETASO.HTASSG.MSTAND.ETYPE.HTASN3
        1CURE(1) # MRIASK 14NC 56 $ 1 + 6 + 1 1 + N AX 5 A T + (MUIAS+ 3 # MAX SAT + NCSES T + 1) / 2
```

```
0N05 165
C BETAS
                                                                               0NUS 159
       ICORE(2) = 2* [MBIAS+3*MA XSA THNCSESTHNDER+NTIDST]
                                                                               0ND5 170
C ASUM
                                                                               ONOS 171
      ICURE(3) = 6 * 4 * (NSTA+ MAXSAT) * MAXSAT
                                                                               ONDS 172
C NSLM
                                                                               ONDS 173
      TARKAM*(TARKAM FATRI) *E*E*(A) JACOL
                                                                               0NOS 174
C REAT . RECN. H. NAME. REATO, REDNO, FO, THERIM
                                                                               0NOS 175
      1CURL (E)=2*(**\STA+4+3*NSTEST)+2*(NSTA+1)*2
                                                                               ONDS 175
C ISTANDIESTANCILOC
                                                                               9NUS 177
      1CORE(@)=NSTEST+(NSTA+2)/2
                                                                               ONUS
                                                                               0NOS
      ICURE(7)=2*3*(NSTA+1)*3
                                                                               ONOS
                                                                                   130
C 3UM1 .
                                                                               ONDS 181
      KPAR2=MAXEAR* (MAXPAR+1)
                                                                               ONUS 182
      1CURE(3)=NAXO(YPAR2,72)
                                                                               CHOS
                                                                                   193
                                                                               ONUS
                                                                                    1.54
      'ICURE(9)=3*(NCSEST+3*MAXSAT+NYIDEN)*2
                                                                               ONUS
                                                                                   195
 INDXC5.STANUS
                                                                               0N05
                                                                                   155
      ICURE(10)=(3*(NCSEST+NSTEST)+1)/2
                                                                               ONDS 137
C SUM2 (DELTA) ATTLACELTA
                                                                               20110
                                                                                   188
      ICORE(11)=2*MAXPAP*3
                                                                               QNUS
                                                                                   16€
C XYZS1G, PLHSIG, STASIG, PLHNOM, XYZNOM
                                                                               ONOS
                                                                                   190
      ICURE(12)=9*NSTEST*3+6*NSTEST*2
                                                                               0N05
                                                                                   121
      ICORE(13) = INTCOF+12*NEONMX*MAXSAT
                                                                               ONUS
                                                                                    192
                                                                               01405
                                                                                    193
C STAXYZISTAXYZC
                                           REPRODUCIBILITY OF THE
                                                                               0503
                                                                                    194
      1CURE(14)=2*(NSTA+1+NSTEST)*3
                                                                               QNUS.
                                                                                    195
                                           ORIGINAL PAGE IS POOR
C PMPX3
                                                                               ONOS
                                                                                    195
       ICURE(15)=2*(NEQNMX+5)*2
                                                                               0N/05
                                                                                    197
CXI
                                                                               ONGS
      TOURE(10)=2*NEGNYX*6*MAXSAT
                                                                               COMO
                                                                                    1 = 0
C PARNUS
       ICURE(17)=(NECNMX+9)/2
                                                                               OND5
                                                                                    200
                                                                               ONOS
                                                                                    201
C AREA. CENTER, ECENTR, DENSO, DSIG
       1CORE( 16 )=4*4*ND IN*2+2*NDENST#2+2*(NTIDEN+MCCMST)*2
                                                                               ONOS
                                                                                    202
C COEFFICIENTS OF CONSTRAINT FORS FOR DENSITIES
                                                                               ONUS
                                                                               ONOS
       ICURE(13)=2=NEFN *NCCNST
                                                                               ONUS
C CSUM. MOUM. LSUM
                                                                               ONGS
      KBASE= 0
       IF(LBAS2+60+0) GO TO 444
                                                                               0425
                                                                                    207
      DO 333 1=1.NSTA
                                                                               ONDS
                                                                                    205
                                                                               CCMO
                                                                                    205
       J=0
                                                                               ONOS
                                                                                    210
       DO 222 L=1.LEASE
                                                                               CNOS
                                                                                    21:
       IF(JEASE(L).EC.I) J=J+1
                                                                               0NUS 211
  THE THUS SEE
                                                                               ONDS
                                                                                    213
  323 KBASE=MAXC(NEASE,J)
  444 LBASE=KUASE
                                                                               0NOS
       ICURE (20)=(NSTA+MAXSAT)*MAXSAT #LBASE #(16+6+1)
                                                                               CHUS
                                                                                    215
C BINA. DIWO. DIWE. BTIME. DESTNOYDETYPE . NUMBER
                                                                               0MOS
                                                                                    210
       KEBLAS=NLELAS+MOD(NEBLAS+2)
                                                                               0NUS 217
                                                                               ONOS.
       NoTA SE=Nee1A5
                                                                                    216
       ICURE(21)=2*(4*MAXPAP+13)*NEBLAS
                                                                               0N03 215
       38307.1#I.NCCRE
                                                                               ONOS
                                                                                    22:
                                                                               0NOS 22
  300 ICURE(I)= ICORE(I) #4
                                                                               011015
                                                                                    22:
       REALNO INTP
C ALLCCATE CURL & BEGIN PROCESSING
                                                                               01105 23.
```

•	(ALL CHARLY(NCDRE,1CORE,61050)	•		ONOS	224
	STUP 1	•		0 NOS	225
1050	KDAE=0			0 NUS	226
	ED 1000 1=1.NCCRE	Ð		ONUS	227
1060	KURE=KCRE(ICORE(I)			с си о	222
••••	KURE=KURE/102¢+320			ONUS	538
	PRINT 1070, KOFF			ONUS	230
C INS	JEFICIENT COSE AVAILABLE PRINT ERHOR MESSAGE	•		0N05	231
	CALL CHREG(10.DATAEP)	•		0 NOS	232
1070	FURMAT(1+1.20x. EXECUTION TERMINATING DUE TO	INSUFFICIENT MAI	N .	0405	233
	. 'CURE STORAGE, '/1HO.15%, 'THE USER SHOULD S			0NO5	
	15, K FLUS ADDITIONAL STORACE 1/21X, FOR AL			0N03	235
	LARGE I/O BUFFERS USED./)	-		0 N05	236
	STUP 10			ONUS	237
10000	FORMAT(1CAS)			0 N05	855
10001	FURNAT (16.14, F7.4, 12.11, 2FF2.0.11, 2(16.14.0PF	7.41.11.16.11.17)	CNDS	239
	FORMAT (3024.15.11/3021.15)			0N05	245
13003	FURWAT (161, 20X, 1 AARNING: 1/160, 15X, 1 INPUT ON T	HE POSITION VECT	JR 🕛	ONCS	5 v I
	. 'CARD IN AFC'.13./21X. 'INDICATES THAT KEPL			CNUS	
	MAY HAVE AN ECCENTRICITY STRATER THAN 1.4	//)		ONOS	243
,	END			ONOS	244

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR





NONAME

DESCRIPTION

- Functions as a driver for orbit determination and data reduction operations.
- Reads input tape for restart when necessary.
- Calls GEOIDH to compute surface density geoid heights.
- Calls ESTIM to initialize the least squares estimator.
- Calls TWOSTA to compute partials and calculated observations for VLBI and average range rate data when necessary.
- Calls PREDCT to compute the orbit for orbit generation runs or calculated observations for measurements other than VLBI and average range rate data.
- Sets parameter numbers for adjusted stations, biases and timing biases.
- Writes a binary residual tape, groundtrack tape, and R-V tape and an optional ORB1 tape.
- Calls SUMMRY to print arc residual summary.
- Calculates and prints adjusted elements.
- Calls TYPORB to print arc summary page.

- Punches adjusted elements of drag and solar radiation pressure.
- Calls DATARD to store updated arc parameters.
- Prints adjusted parameter variance-covariance matrix.
- Calls ESTIM to calculate adjusted common parameter values.
- Prints adjusted arc force model parameters.
- Corrects and prints adjusted biases.
- Prints residual summary for all arcs.
- Calls ESTIM to estimate geopotential parameters.
- Computes estimated station correlations.
- Prints estimated station summary.
- Prints geopotential coefficient adjustment information.
- Calls UPDATE to compute effects of adjusted geopotential parameters on adjusted individual arc parameters.
- Calls subroutine to print correlations on adjusted parameters.

N	ME	_	NONAME
Pί	IRPOSE		1) TO DRIVE ORBIT GENERATOR AND DATA REDUCTION OPERATIONS 2) TO DUTPUT RESIDUALS: EPHEMERIS & ADJUSTMENTS
C /	ALLING SEC	OUENCE ^ .	CALL NONAME (NPARM, PMPXO. BSNUS. BIASO. BBIAS. BIASSG. BSTRT. BSEND. BSTANO. BYTPE. PARNOS. DDELTA. TTL. DELTA. STANDS. ISTANC. NAME. SUMI.INDXCS. GPVAL. GPVALO. GPSIG. GPNO. AREA. CENTER, DENCON. BESTNO. BETYPE)
	SYMBOL	TYPE	DESCRIPTION
	NPARM	1	INPUT - WAXIMUM NUMBER OF "PARAMETERS PER WEASUREMENTS
· .	PMPX0 (NPARMil)	DP I)	INPUT - MEASUREMENT PARTIALS WITH RESPECT TO EPOCH PARAMETERS
	85NOS (1)	1*2	INPUT - LCCATION IN HORMAL MATRIX FOR BIASES
	31ASO (1)	DP	INPUT & CUTPUT - APRIURI BIAS ESTIMATES
	DBIAS	DP .	INPUT - CURRENT BEST BIAS VALUES
	B1A356	DF	INPUT & CUTPUT - STANDARD DEVIATIONS OF BLASES
	. 25TAT (1)	υP,	INPUT & CUTPUT - BIAS START TIMES IN DAYS FROM JAN 0.0 OF THE REFERENCE YEAR
	BSEND (1)	эр	INPUT & DUTPUT - BIAS STOP FIMES IN DAYS FROM JAN 0.0 CF THE REFERENCE YEAR
	BSTANO (1)	I # 2	INPUT & CUTPUT - BIAS STATION NUMBERS
	BYTPE	S * I	INPUT & CUTFUT - SIAS TYPES REPRODUCIBILITY OF THE
	PARNUS (1)	1 + 2	GUTPUT - PARAMETER NUMBERS REPRODUCIBILITY OF ORIGINAL PAGE IS POOR
	ODELTA	υF	INPUT - SCRATCH VECTUR
	TTL (1)	۹٥ 	INPUT - ADJUSTED PARAMETER TITLE ARRAY
	DELTA (1)	9G	INPUT & CUTPUT - COSKECTION VECTOR FOR ADJUSTED PARAMETERS

STANDS [#2]	ÎNPUT - LO	DCATIUNE IN ERTAINING T	NORMAL MATE D ADJUSTED S	RIX OF INFO STATION COO :	RMATION ROINATES
ISTANO / 1+2 (1)	INPUT - 5	TATION NUMB	irs	•	
NAME UP	INPUT - 5	TATION NAME	s	•	
SUM1 DP (1)	INPUT - N	CRMAL MATRI	x	•	
INDXCS 1+8 (3:1)		NDICES OF A DEFFICIENTS	OBD DATRULC	POTENTIAL -	
GEVAL DE			VALUES OF CUEFFICIEN		
GPVALO DF			MATE FOR AD		
GPSIG DP	INPUT - S	IGMAS FCR A	DJUSTED GEO	POTENTIAL P	ARAMETER
GFNU 1*2		CCATIONS OF ORMAL MATRI		AL PARAMETE	RS IN
ARÉA DP	INPUT & O	UTPUT - SU∺	FACE DENSIT	Y SUB-BLOCK	AREAS
CENTER OF		THE GEDCENT		ATES OF THE	
DENCON DF	INPUT & D	AND		ELATING CON NED SURFACE	
BESTNÜ 1+2	INPUT - E	LECTRONIC E	BIAS STATION	I NUMBERS	
0ETYPL [+2	INPUT - E	LECTRUNIC E	SIAS MEASURE	MENT TYPES	
SUERDUTINES USE	ED DATARD ESTIM FANDRD DATES ELEM	CLEAR 2 RANDWR CUSDUT ESCOMP CORREL	PREDCT ERROR SUMMPY TYPORS	OUTRAD COMADJ UPDATE CLEAR	ORBI STAINF GEOIDH TWJSTA
CCM4CM BLUCKS	APARAM INITEK XYZOUT EMODEL	CUNDUT TRUBLIK PREBLIK CGEDS	CPARAM CUNSTS FLXBLK CELEM	ALPMRC CTIME PRIDUI GNOTRK	INTULK XYZ CSTINF CORBI
REPRODUCIBILITY ORIGINAL PAGE	OF THE IS POOR	1NAUT RESTA	ART TAPE NU!	MBER	

8.0-18

1909 126

FLTP - FLUX DATA FILE

DUTPUT FILES

DINCUN, EESTNO, AETYPE)

CUTP - PRINTER
PLOTP - EINARY RESIDUAL TAPE
XYZTP - PRINTER
RVTP - BINARY SAIELLITE EPHEMERIS TAPE
GROTP - GROUNDTRACK TAPE

SUBROUTING NONAME(NPARM, PMPXO, ESNOS, BIASO, BBIAS, BIASSG, BSTRT, BSEND, BSTAND, SYTPE, FARNOS, DCELTA, TTL, DELTA, STANOS,

1STANC:NAME.SUM1:INCXCS:GPVAL:GPVALO:GPSIG:GPNC:AREA:CENTER:

- Sincon yels indirection	1 40.1	
IMPLICIT REAL*3 (A-H, D-Z)	1000	127
LOGICAL*1 VHECHN:PREPRO	INON	128
LUGICAL ICREFT, VARSTP, OFBISW, XYZFSH, XYZLSW, TOREFO, PLILSW, NOPRNI,	1309	139
• PLDISW, INITAL, DATASW, SATSW, FITER, LITER, DRAGSW, LITRES, LINNER,	POPE	1.30
LOUTER INCRRATIONAGERIGEDSWICEDSWISSATIKEPLEFIHLVDSWIPARTSFI	15033	1.31
• BMAT, SIMDAT, PCESIM, PBMAT, TRKSW, STARTW, STARTR, INNRSW, SATSAT	10000	133
* LUGICAL HYPER	PONT	133
INTEGER#2 MTYPE, NMEAS, PRETYP, CHANEL, USTAND, BYTPE, PAPNOS, BSNOS,	INON	1.36
 STANDS, ISTAND, INDXES, GENO, ISAT, RETYPE, RESTNO 	1909	135
INTEGER BUTERRYTP:DATP:XYZTP:AFCNO:ADDR:ADDRD:SRAD:BSNDX:BINDX1:	NON	136
 BINDA2:TINDX:PLDTP:FLTP:OUTER:UJSUPR:ESTSTA:PARLIM:RSCNO; 	1101	1 37
• SCRA, SCRC, GROTP, RECNOI, EMAINU, ORDER, STARIA, STARTO, BUTSTR	1404	138
"REAL Aliaz, FNO, AXYZ, USUM, RMSO, EDITH, FASTI, EAST2, RMSNJ, &TMEAN.	1809	139
ASTRSK:CONVRG:RDMEAN:RMSPRV:SGPRNT:VARCDV:TITLE:OUTCON:RM54LL;	1404	140
 RMSTUT:ATRND:RMSLST:RMSWT0:TYPP43:PI:TWOPI:RAD:RSEC:BRSID1: 	1809	151
• BRSID2:ERSEC:NOEDIT	1004	130
LOUGLE PRECISION MODEL NAME ITAMS LLHAT MSAT MADDY LOVE	1004	163
DIMENSION SSNCS(1),81ASO(1),83IAS(1),31ASSG(1),3STRT(1),	1202	144
• BSENJ(1).BETANU(1).EYTPE(1).PARNUS(1).PMPXO(NPARM.1).	INON	1 45
DUELTA(1).TTL(1).DELTA(1).ITAPE(2).SDELEM(6).RMSPOS(2).	1808	165
• 103G(4),MIN(4),S6C4(4),APRICR(2),ADJUST(2),SD(3),LHAT(3),	NCNI	107
• DRBEEP(6,2),079DIF(6),STANDS(3,1),0SNDX(3),15TANO(1),	1838	162
NAME(1):SUM1(1):AXYZ(6):STP5Z1(1):ICS(2):INDXCS(3:1):DRAG(2):	1809	149
 GPNO(1),GPVAL(1),GPVALO(1),GPSI3(1),GFSI01(3),ERSI02(3) 	180%	150
CIMENSIUN PVRMS(2,2), #REA(1), CENTER(1), DENCON(1), PESTNO(1),	1438	151
• BETYPE(1)	MONT	152
COMMENZAFFRAMZINPAR: INPAR I:NBIAS: ESTSTA: NSAT: NGPARC: RECNOT: NPARAM	1838	153
• NEBIAS MAXPAR	THON	154
COMMENSACE NOUT / RUSALE, DUTCEN, MINDUT, MAXBUT, LITTES, MAXSAT, MAXZIN,	1908	195
 NSTART -NEONMX - IVAS - ICRCER - NAPCS - MSTARD - STARTR - STARTW - STARTA - 	INDM	:56
• STARTC INSTRI-OUTSTP	1000	
COMMON/CHARAMINSTAINMASTINSTESTINDIMINGTASINGPC1.NGPC2.NGPCOM.	NON	153
 NCSEST, CYPGPR, LIMI, LIM2, NOEN, NOEMST, NTIDST, NTIDEN, INNRSW. 	INDN	159
• NCONSTINDECYS	INON	150
CUMMONZALEMACZITHMS(S).TIMING.FLANK.ATYPE(31).UNITS(15).ELCUT.	INON	
• HYPER	1838	
COMMUNIZATELKITHTOT1.TEDOT2.THCT25.GM.AS.AESO.FLAT.ESC32.FF5032.	18/00	143
* 5M3(5) -4(2) + 300T(2) + F0(2) + AFGM(2) + APLM(2) + RPRESS + INITAL + NURPAT	11101	150
 The TGG -MADDLY(S) - STOPSZ (A) - HLVE - 3(2) - DELFR3(2) - CTCL(2) - GTDL(2) - 	1404	155
• STPLUX(2).STEPUP(D).CRDER(2.D).AJAT(D).MSAT(2).VARSTP(2).	INCS	
• MEVOSA(3).NEGN(2).APDF(2.3).EDV((1).TC:PFT.NEGRY	14138	
	-	

```
IMON 168
          CUMMON/IN1TEK/LEPYMD. LEPHM. EPSEC. LYREF. LNUMAX. LNNMLN. CONVRG.
               "ORBEL(6.2).EDITH.INSUPP.IDSAT(2).ORETS#.XYZFS#.XYZLSW.PLTLSW.
                                                                                                                                        1NON 169
                                                                                                                                        1NON 170
                GRDFSW.KEPLER.SUBSAT.PARTGP.PEMAT.BMATNC.SIMDAT.PCESIM.
                                                                                                                                        1NON 171
                MISLOG(9)
                                                                                                                                        1NOU 172
          COMMONITEESLKIINTP.OUTP.DATP.XYZTP.KPLRTP.RVTP.PLCTP.IOBS.SCRA.
                                                                                                                                        1NON 173
                SCAC.FLTP.GRDTP.
                                                                                                                                        190N 174
          COMMON/CONSTS/CPI+OTWOPI, CRAD, CRSEC
                                                                                                                                        1110N 175
           CUMMUN/CTIME/DATAEP.DAYFEF.DST4RT.DAYSTP.DAYINT.DORBIT.DAYEND.
                                                                                                                                        INON 176
                DRATE . EDRUI . DOR 91E . CRBAT . IYEEG
                                                                                                                                        INON 177
          CUMMON/XY2/AEINFM(9),KS4T,IFCRCE(2)
                                                                                                                                        INON 178
          COMMON/XYZOUT/XYZENO(5+2)+0PGPAP(6+2)
                                                                                                                                        1NON 179
          COMMON/PRESER/GAYSTA.08S01.08SC2.SIG1.5IG2.SRFNOX.ISTA.MTYPE.
                                                                                                                                        1NON 180
                NMEAS . ISAT . PRETYP . CHAMEL . VHFCHM . PREPRO . RECNU.
                                                                                                                                        INON 181
          CGMMON/FL)8LK/FLUX1(405),FLUX2(405),FLUX3(405),FLUX4(405),
                                                                                                                                        INON 192
                FLUX5(405)
          COMMON/PRIJELEMIN(5.2).VARCCV(5,5.2).TITLE(60).DRAGSG(2.3).
                                                                                                                                        183 NON1
                DRAGU(2,3),CD(2,3)
                                                                                                                                        1NON 184
          COMMONIZESTINE /MEASNO(4) + NOBS(4) + ROMEAN(4) + RMSO(4) + RNO(4) + ...
                                                                                                                                        INON 195
                MERSKI()), WIMEAN(4), RMSWIO(4), WIRNO(4), TYPRMS(30), NOTYPE(2,30), INON-186
                BSUM(a,12),625NO(30),NCALL(30),NOWTCB,L3ASC
                                                                                                                                        INON 137
        · COMMUNITATEDELITADEX1. NCEX2.INCEX3.INDEX4.CS(30.33).MUDEL(8)
                                                                                                                                        1NON 168
          COMMON/CGEOS/ISATID(2), IPFEPR(453)
                                                                                                                                        INON 139
          CUMMON/CELEM/FLEMST(6,2), CRBFLA(6,2), IGIS(4), RMSTOT
                                                                                                                                        INON 190
          COMMUNISHER KISATEAT(2):SATEUN(2),SATH(2):ELEV(2):SATSW
                                                                                                                                        100 ACM1
          C) CPR4. (S) TH94. (S) THFFF, (C) TOORB9. (C) TOCHARLER (S). VICENDANCE
                                                                                                                                        1NON 192
          REALWS PREV(2)/ PREVIO: , *US!/, CHANGE/*DELTA!/
                                                                                                                                        INON 193
          EQUIVALENCE (TINDY: USNOY(1)); (EINDX1; BSNEX(2)); (BINDX2: ASNDX(3));
                                                                                                                                        1NON 194
                (GIG.CICI).(KKSAT.CIC2).(PI.CPI).(TWOPI.OTWOPI):
                                                                                                                                        1NON 105
                (RAD, DRAD) . (RSEC . DRSEC) . (PRE(1) . TRKS #)
                                                                                                                                        1NON 195
                                                                                                                                        INON 197
          UATA ASTREKZIEKZANGEDITZIEZ
           CATA HERTZ/SHEERTZ/
                                                                                                                                        INON 198
           DATA APRICE, ACJUST, SD/
                                                                                                                                        1NON 199
                    6HA FRIO.2HRI. 5HACUUST.2HED.6H3TANCA.6HRD DEV.6HIATION/
                                                                                                                                        1NON 200
          VTOCSH4, TOCYH4, TOCKH3, TOCKH
                                                                                                                                        INON 201
           CATA PCEZAN PCEZ
                                                                                                                                        INON 202
          LATA ARCNURSTURS ARAGEZSESZ
                                                                                                                                      - INGN 203
           DATA ILS/180.185/.ORAG/AHDRAG.EHDRAG DUT.5850LRAD/
                                                                                                                                        1NON 204
           CATA BYATZAFALSEAZ
                                                                                                                                        1NON 205
           CATA NEACEX/1/
                                                                                                                                        INDN 206
           INUXNU(I)=NDIM*(I-1)-(I*(I-1))/2
                                                                                                                                        INUN 207
10000 FURMAT(20#4)
                                                                                                                                        INON 205
           NCSMAX#NCSEST
                                                                                                                                         INDN 209
           ARCNU-STARTA
                                                                                                                                        1NON 210
           CUTER=STAFTO
                                                                                                                                        INON 211
           IF(STARTE) MAXGUT=STARTC
                                                                                                                                        1NJN 212
           LCUTER=MAXOUT.LE.OUTER
                                                                                                                                        1NON 213
           IF( . NOT . STARTS) GO TO 200
                                                                                                                                        1NON 214
           IF(STARTA:LT:2) GD TO 200
                                                                                                                                        1NON 215
C IF RESTARTING REAC INPUT TAPE
                                                                                                                                        1NON 216
           NI=START/-1
                                                                                                                                        1NON 217
           CO 190 N=1.N1
                                                                                                                                        INON 218
           CALL LATARD (MINTRUENIN FALSENIN FALSENI
                                                                                                                                        SIS NON!
           RPARAMETREAGIENSIAS
                                                                                                                                        1004 220
           IF(N.GT.1) REAU(INSTRY)
                                                                                                                                        INUN 221
           READ (INSTATE LL
                                                                                                                                        INON 222
           1.=NDIM#(NE1#+13/2
                                                                                                                                        INUN 223
```

```
THON 224
     Do 125 Il=1.L.225
                                                                            1NON 225
    . 12=MINO(11+224.L)
  125 READ(INSTRI) (SUM1(I). I=11.12)
                                                                            1NON 226
                                                                            INON 227
      DO 150 I1=1.NEIM.225
                                                                            1NON 228
      12=MINO(11+224,NDIM)
                                                                            INON 229
  150 READ(INSTRT) (CDELTA(I).1=11.12)
                                                                            1NUN 230
      DO 175 II=1,LL,225
      12=MINO(11+224.LL)
                                                                            INON 231
  175 WRITE(SCRC) (SUM1(I).1=11.12)
                                                                            1NON 232
                                                                            1NON 233
  130 CALL DATAFO(N. FALSE. . . TRUE. . . FALSE.)
      TRIBAL CRIMBA
                                                                            INON 234
      CALL STAINF(1.0.P.P.P.P.P.P.P)
                                                                            INDN 235
C START OF OUTER ITERATION LCOP.
                                                                            1NON 236
                                                                            1NON 237
  200 RECNUED
      IF(NGPCCM,LE.O) GO TO 250
                                                                            INDN 238
                                                                            INON 239
C SET COMMON ADJUSTED GEOPOTENTIAL CCEFFICIENTS TO CURRENT BEST VALUE
                                                                            1NON 240
      NC51=NCSMAX+NGPCOM+1
                                                                            1NON 241
      DU 225 I=NCS1,NCSMAX
      J=INDXCS(1.1)
                                                                            1NDN 242
                                                                            1NON 243
     .N=1NDXCS(2,1)
                                                                            1NON 266
      M=1MDXCS(2,1)
      C1=GPVAL(1)*GPSIG(1)
                                                                            INON 245
                                                                            INUN 246
      IF(J.EG.1) CS(N.M+1)=C1
                                                                            1NON 247
 225 1F(J.EC.2) C5(31-N.33-N)=C1
  250 CONTINUE.
                                                                            1NON 248
      IF(NOLN+LE+C) GO TO 30C
                                                                            1NON 240
C CCYPUTE SUPPACE DENSITY REDID HEIGHTS
                                                                            INON 250
      CALL GEGICH (AREA: CENTER: DENCON!
                                                                            INON 251
C READ INÉURMATION FOR NEXT ARC
                                                                            1NON 252
  300 CALL DATABO(ARCNO...TRUE...FALSE...FALSE.)
                                                                            INON 253
      NSAT3=3*RSAT
                                                                            1NJN 254
      ITAPE(1)=CUTR
                                                                            1NON 255
      ITAPE(2)=XYZTP
                                                                            1NDN 256
      IF(UUTWA+NE+1) GO TO 320
                                                                            INON 257
      (DIXXAMART, DUKAMERISKAM
                                                                            1NON 258
      1F(Innmax*NE*10) Innmax=maxo(1*mod(Innmax*10))
                                                                            1NON 259
  320 CALL CLEAF(PSNOX:3:1)
                                                                            1NON 260
      MINUEX = ESISTA
                                                                            INON 251
C READ FLUX DATA FOR ASC.
                                                                            1NON 252
      READ(FLIP) THETGO, FLUX 1
                                                                            INON 253
      READ (FETF) FEUX2
                                                                            1NON 254
      READ (FLTP) FLUX3
                                                                            1NJN 255
      READ (FLTP) FLUXA
                                                                            1NON 266
      GEAD(FLTF) FLUXS
                                                                            1NON 267
      IF (DROTSK) GO TO 380
                                                                            140N 266
      CALL CLEAFT (PARNOS, NPARMAL)
                                                                            1NON 259
                                      REPRODUCIBILITY OF THE
      DU 375 I=1, INFARI
                                                                           INON 270
                                      ORIGINAL PAGE IS POOR
  375 FARNUS(I)=1
                                                                            1NON 271
  390 INPARTINEART
                                                                            1NON 272
      NPAFAM=INFAPI+NBIAS
                                                                            INDN 273
      LIMNER = INNMAX. EQ. I
                                                                            AFS NON!
      INde K= I
                                                                            1NON 275
      DU 400 I≈1.8
                                                                            INUN 276
  400 STPSZ1(1)=515PSZ(I)
                                                                            INON 277
      JEINGPARCELTECT GO TO 420
                                                                            1NON 276
C 561 ARC ADJUSTED GEORGEOTENTIAL CORRECTIONES TO CURRENT BEST VALUES.
                                                                            INDM: 279
```

```
LU 410 I=1.NGPARC
                                                                               1NON 290
       J=INDXCS(1.1)
                                                                               1NON 231
       N=INDXC3(2.11
                                                                               1NO: 282
       W=INDXC5(E,I)
                                                                               1NON 203
       C1=GPVAL(1)×GFSIG(1)
                                                                               INON 234
       IF(J.EG.1) CS(N.M+1)=C1
                                                                               1NON 295
  410 IF(J.20.2) CS(31-N.33-W)=C1
                                                                               INDN 286
  420 FARLIMENSTART-1
                                                                               1NON 297
C START OF INNER ITERATION LCCP
                                                                               1NON 238
  €50 IF(ORETSK) GO TO 560
                                                                               1NON 289
C SET SWITCHES FOR DATA REDUCTION
                                                                               1NON 290
      LIMI=NSTART-1
                                                                               1NON 291
      IF (INNER & EU + I + AND + ARCNC & E C - 1 ) LIMI = NDIM
                                                                               1NON 292
      ESTSTA=NMAST
                                                                               1NON 293
      LIM2=0
                                                                               1NON 294
      IF(EINNER) LIM2=1
                                                                               INON 295
      NUPRAT=INSUPR.EQ.4
                                                                               1NON 296
      LAYUNG=DSTART(CRATE
                                                                               INON 297
      IF (DATALP .LT . OSTARY) DAYORB = DA TAEP
                                                                               1NON 298
      EMAT = BMAT . CH . EMATNO . GT . C
                                                                               1NON 299
      MICHALMICA) DAXUMI=E
                                                                               INON 300
      IF (BMATHE GT . 0) CALL CLEAR (SUM 1. J. 2)
                                                                               INON 301
C INITIALIZE LEAST SQUARES ESTIMATOR
                                                                               INON 202
      CALL ESTIM(1, P, P, P)
                                                                               thon 303
      GO TU 570
                                                                               1NON 304
C SET START TIME FOR ORBIT GENERATOR
                                                                               1NON 305
MEGDUELHOYAG, DAYON,
                                                                               INON 306
      15-N= 0
                                                                               INON 307
 670 NOS=M1N38x=1
                                                                               INDN 309
C INITIALIZE INTEGRATOR STEP SIZES FOR NEW INNER ITERATION
                                                                               1NON 309
      CU 075 [=1.4
                                                                               1NON 310
  678 STEPSZ(1)=STPSZ1(1)
                                                                               1808 311
      RECNG=RECNOL.
                                                                               1N3N 212
C SET COUNTERS & LUGICAL SWITCHES FOR NEW INNER ITERATION
                                                                               INDN 313
      PROPRUE, FALSE.
                                                                             A 18 MCM1 -
     I = X L CN I M :
                                                                               1NJN 315
      CSATAU#IYAJ
                                                                              1NON 316
      INNRSH= . FALSE .
                                                                               1NJN 317
      LINES=0
                                                                               1NON 318
      LINESK=0
                                                                               INON 319
      FITER=INNER+EC+1+ANC+GUTER+EQ+1
                                                                              1NON 320
      LITER#LINNER. #ND.LOUTER
                                                                              IN 3N 321
      NOPRNI=+NCT+(NOPRNI+OP+(LITER+AND+INSUPR+GT+1)+UR+(FITER+AND+
                                                                              1909 322
             MCE(INSUPR.21.FO.1)}
                                                                              1NON 323
      SATS A= (FITSH. AND . XYZESH) . CP. (LITER. AND. XYZLSW)
                                                                              INON 32A
      GRUSW=FITER.AND.GROFSW
                                                                              INDN 325
      SUBSATE SATSWARRAGROSM
                                                                              143M 334
      PEUT SHEPETUS HEANDELITER
                                                                              1NUM 327
      TRKSW=FUC15%
                                                                              1NON 325
      CMPGPR=NGPARC+GT+0
                                                                              1NON 329
                                          REPRODUCIBILITY OF THE
      NCSEST = NGFAFC
                                                                              INON 230
      IF ( + NOT + LINNER) GO TO ESO
                                          ORIGINAL PAGE IS POOR
                                                                              INON 331
      INNOSA = AT IDEN + GT + O
                                                                              INON 332
      INPARTIMPARTNOPCOMENTIDEN
                                                                              1000 333
      IF (NUPLEM , FO + 0) GO TO 179
                                                                              1NOH 336
      CMPGHK = . THU ...
                                                                              1004 235
```

		NCSEST = NCEMAX	•			1NDN 336
	674	11=NGPCEMANTICEN	•			1NON 337
	J 1 13	IF(I1.LE.C) SC TO 690	•,			INDN 338
		60 630 I=1.I1			•	1NON 339
	230	PARNUS (INFARI+1)=NSTART+I+1	•	•	•	1NUN 340
_		NUMBER OF FORCE MODEL EQUATIONS	TO BE INTECDATED			1NON 341
C			TO SE INTEGRATED			1NON 342
	096	NEGN(1)=1		•		INDN 343
		NEON (2)=1	•			1NON -366
		1FURCE(1)#0	•			1NON 365
		1FUHCE.(2)=0.				1NON 346
		IF (ORBISW.OR. (LITER.AND.LITES)		•		INUN 347
		NEON(1)=7+NGPANC+MAXO(ACDF(1,1)	**************************************			1NON 345
		IFURCE(2)=MEGN(1)-7-NGFARC				1NON 349
		K=M4 KO (ACCR (2.1), ADCR (2.2), ADDR	(213))			1NON 350
		IF (K+GT+C) K=K+JFORCE(2)	a design of the second of the second			7
		NEON(2)=7+NGPARC+K				1NON 351
		IF(*NOT*LINNER) GO TO 693				SEE NGMI
		NEON (1) = NEON (1) + NGP COM+NTIDEN	•			1NON 353
		NEUN(2)=NECN(2)+NGPCOM+NTICEN	•			1NON 354
		GU TU ESE	•			1NON 355
		IdPAR=0				1NON 355
		INITAL= THUE .				1NON 357
C	\$? 1	EDIT CRITERION & START TIME	•			1NON 358
		CDIT=HMSTCTMEDITM				1004 359
		RMSLST = RMSTOT	•			1NON 350
		CAYOFUSTART				1NON 351
		DATASamaFALSE				140M 368
		ISTA=1	•			INUN 343
		IF(INNER.EQ. 1. AND. ARCNC.EQ. 1) I	STA=0			IN IN 354
C	INII	TALIZE STATISTICS FOR INNER ITE	POSTAGE			1NON 355
		IF(*NOT, CHBTSW) CALL STAINE(1.1	STA,P,P,P,P,P,P)			1N3N 356
	700	IF(GRATSA) GO TO 930				1NJN 357
		IF(DATASA)53 4TO 900			•	1NON 359
	7 2.5	RCCNO=ReCNO+1	•			1NON 359
C	REA.	D CUSERVATION				1NUN 370
		CALL RANGED				175 MIM:
		IF(MTYPI+(T+0) GO TO 775	•	·		INUN 372
7 :	50	DAYS FA= 999450				1NON 373
		GO TJ 900				1000 376
	775	CT=LAYSTA-DAY1				- INON 375
		IF(DT.GT001D01G0 TO 900				1NON 376
		IF(*noT*FITER) GO TO 725				INON 377
Ç		IT RESSAGE FOR CHSERVATION OUT C	F TIME ORDER			1NON 375
		CALL DATESTOAYSTAILYMD (THM: SEC)				140N 379
		WRITE(CUTF.10202) ISTANO(ISTA).	IYMD.IH4.SEC			INUN 350
		60 TO 725		•		1NON 331
C	DETA	ERMINE EARLIEST TIME FOR INTEGRA	TION END	•		1NON 382
_		1F(DAY 5TA-DAYERE) 575,950,925	•	. *		1NON 383
	; 2€	15%=0	TUM GO			1NON 396
		UATA SA E. TRUT.	REPRODUCIBILITY OF THE			INON 385
		DAY1 = CAYCRO	REPRODUCIBILITY ORIGINAL PAGE IS POOR			1NON 386
		CAYUNU = CAYUNG + CPATE	ORIGINAL PAGE	-		INON 337
		GO TO 10CC	•			1NDN 296
;	550	CAYURO =UPYJRE+DRATE				1404 356
		LAY1 =GAYSIA				1NCM 300
		DATASATARALETA				1000 300

```
ISN=1STA
                                                                             INON 392
C DETERMINE IF INTECRATION COMPLETE
                                                                             1NON 393
1900 IF(DAYSTA GT. SEE DO AND DAYL GT, DAYEND) GO TO 2000
                                                                             1NON 394
       IF(MTYPE: LE: 26) GO TO 1100
                                                       ô
                                                                             1NON 375
C CEMPUTE PARTIALS. & CALCULATED OBSERVATION FOR VEBI & AVG RANGE RATE
                                                                             1NON 395
C CATA
                                                                             1NON 397
      CALL TRUSTA(ISN. DAYI, RESIDI, DATASWI
                                                                             1NON 398
      - GU TO 1150
                                                                             1NON 399
C CCMPUTE GREET FOR GREET GENERATOR RUNS OR CALCULATED DESERVATION FOR
                                                                             1NON 400
C MEASUREMENTS CIHES THAN VLET & AVG RANGE RATE
                                                                             1NON 401
 1100 CALL PREDCT(ISN, DAY1, RESID1, RESID2, DATASW)
                                                                             1NON 402
C CALCULATE UTC DATE & TIME OF CASERVATION OR EMPHEMERIS POINT
                                                                             1NON 403
 1150 CALL DATES(DAY1.IYMC.IHM.SEC)
                                                                             1NON 404
      IF (UNGISWOOK CATASW) GO TO 1600
                                                                             1NON 405
      NEDITI#0
                                                                           . INDN 405
      N=3172=0
                                                                             1NON 407
      IF(MTYFE.GT.14.AND.MTYPE.LT.27) GO TO 1450
                                                                             1NON 408
      IF(*NUT*LIMNER) GO TO 1450
                                                                            1NON 409
    - 4F(NSTLST-LE+0) GO TO 1450
                                                                             1NON 410
C SET PARAMETER NUMBERS FOR ADJUSTED STATIONS
                                                                            INUN 411
     -DO 1610 1=1.3
                                                                            1NUN 412
      PARNUS (NFARM-3+1)=0
                                                                            1NON 413
      PARNUS (NEASY-6+1)=0
                                                                            1NON ALC
      IF(1STA: LE: NSTEST) PARNOS (NPARN-6+1) =STANOS (1: ISTA)
                                                                            1NON 415
      IF(MTYFE (LT, 27) GO TO 1410
                                                                            1NJN 416
      IF(CHANEL .LE . ASTEST ) PARNOS (NPARM - 3+1) = STANOS (I . CHANEL)
                                                                            1NON 417
 1410 CONTINUE
                                                                            INON A18
 1450 IF ( NET FITER) GO TO 1460
                                                                             1M3N 419
      UAYSTA=CAY1
                                                                             INON 420
C REWRITE CURRECTED MEASUREMENTS ON C.A. FILE ON FIRST INNER ITERATION
                                                                            1NON 421
C OF FIRST OUTER CNLY
                                                                             INCN 422
      CALL KANDER
                                                                             INDN 423
      IF( NUT . (SIMOAT . AND . FITER)) GO TO 1460
                                                                             1NON 424
C IF SIMULATED DATA REQUESTED OUTPUT, WRITE CALCULATED OBSERVATION ON
                                                                            INUN 625
C UNIT 17 ON FIRST IMMER OF FIRST DUTER DNLY
                                                                            1NON 425
      IF (MIYPE + GT + IA) RESIDE = C+ CDO
                                                                             1NON 427
      CosIMI=DESDI-RESIDI
                                                                             INDN 423
      CB$1 N2 = J6502
                                                                            INON 629
      ISTA2=CHANEL
                                                                            1NON 430
      1F(MTYPE . CT . 26) CHANEL = 1STAND(CHANEL)
                                                                            1NON 431
      IF (MIYPLALTAIA) DBSIM2=CUSD2-RESID2
                                                                             INON 432
                                            REPRODUCIBILITY OF THE
      SATSAT= . FALSE .
      IFINITY PER NEW RAND MIYO E NEW BY CO TO UNIGINAL PAGE IS POOR
                                                                            1NON 433
                                                                            INON A3A
      SATSATEKKSAT.GT.O.AND.KKSAT.LE.NSAT.
                                                                            1NON 435
      1F(.NUT.STAST) GD TO 1455
                                                                            SEA NONE
      J≃KKSAT
                                                                            INON A37
      KKSAT=15ATID(KKSAT)
                                                                            1NUN 43º
      CUST M2 = UESOR
                                                                            INON 43¢
1455 K=ISTANU(ISTA)
                                                                            INDN 440
      #RITE(17) IYYD. IHM. SEC. OBSIMI. CBSIM2. SIG1. SIG2. K. MTYPE. NMEAS.
                                                                            INON 461
         ISATIC(ISAT), SEENDX, CHANEL
                                                                            1NON 442
      CHANEL = ISTAD
                                                                            INON 443
      IF (SATSAT) KKSATEJ
                                                                            IN IN COA
C CELCK FOR CLEVATION CUTOFF.
                                                                            INCH 465
 1450 IF(ELEV(1541).OF. SUCUT) GO TO 1465
                                                                            INON CAS
     . $101 = 0 . OCC
                                                                            INON AAT
```

```
INON 448
      IF (NME AS . CT. 1) SIG2 = 0. CDO
                                                                            1NON 449
 1465 IF (MTYPE, LT. 27) GO TO 1470
                                                                            INON 450
      IF(RANCUT(1).LT.FLCUT) SIG1=C.CDO
                                                                            1NUN 451
 1470 IF (NUPRNI) GC TO 1501
                                                                            1NON 452
      IF (LINES . EQ. 0) GO TO 1485
                                                                            1NON 453
      IF(MOD(LINES.42).NE.0) GO TO 1500
                                                                            1NON 434
      WRITE(CUTF+10101)
                                                                            INON 455
      MPAGE=MPACE+1
                                                                            INON 456
 1435 WRITE (UUTP. 10100) ARCHO. INNER. EUTER, MPAGE
                                                                            1NON 457
 1500 IF(MUD(LINES.6).E0.0) WRITE(DUTP.10102)
                                                                            INON ASS
     LINES=LINES+1
                                                                            ININ 659
 1501 IF (NESIAS, LE. C) GO TO 7000
                                                                            MON A60
C SET INDICATORS FOR ELECTRONIC BIAS EXTRACTION
                                                                            1NON 451
      CJ 5000 1=1. NEP1AS
                                                                            1NJN 462
      IF(ISTA.NE.DESTNO(II) GD TO 60 CO
                                                                            1HJN 453
      1F(MTYPE.CO.BETYPE(I)) 60 TO 5000
                                                                            1N 3N 454
      IF(MTYPE.GT.7) GO TO 6000
                                                                            1NJN 465
      IF(MTYPE+7, NE.BETYPE(I)) GO TO 6000
                                                                            1NON AS6
      NEDITCEN
                                                                            1NON 467
      GU TU COCC
                                                                            140N 458
 SODO NEDITIEI
                                                                            1NDN 469
 SOCC CONTINUE
                                                                            INDN 470
 7000 IF(NBIA5.50.01 GO TO 1526
                                                                            1101 671
C SET INDICATORS FOR BLASES & TIMING BLASES
                                                                            10/0N 472
      £0 1502 I=1.3
                                                                            INON ATS
 1502 BSNDX(1)=0
                                                                            1NJN 47A
      IF (MTYPICT, 1444ND, MTYPE, UTV27 ) GD TO 1526
                                                                            1NON 475
      DO 1520 IF1.NEIAS
                                                                            1NON 475
      IF(ISTA.NE+6STANO(I)) GC TO 1520
                                                                            1404 477
      I1=SYTPE(II
                                                                            1NON 476
      IF(11.E0.0) GE TO 1508
                                                                            1NON 479
      IFEMTYPE. GT. 20. AND. MTYFE. EO. III GO TO 1503
                                                                            1NON 450
     IF(MTYPE:NE:(11-(11/8)*7)) GO TO 1520
                                                                            INDN ABI
 1503 IF(UAYSTA-LT-ESTAT(1)) GO TO 1520
                                                                            JNON AR2
      IF(DAYSTA.GI.ESEND(I)) 00 TO 1520
                                                                             INCN ASS
      II=INPANIII
                                                                            INON 484
      IE(3YTPE(I)-MTYPE)1612.1513.1514
                                                                             1NON 495
 1512 TINDX=11
                                                                            1000 436
      MEASTPEAT YPE
      IF(MTYPE.LE.14) TPARI = CESCOT(MEASTP. ISTA. TPARZ)
                                                                             1NON 487
                                                                             1NON A48
      GU TU 1520
 1513 SINDX1=11
                                                                             1N3N 639
                                            REPRODUCIBILITY OF THE
                                                                             INDN 490
      GO TO 1320
                                            ORIGINAL PAGE IS POOR
                                                                             190N A91
 1514 SINOX2=11
                                                                            SOV NEKE:
 EURITH CO CEST
       IF (MTYPE+LF+14) GO TO 1525
                                                                             THON ASS
                                                                             1804 494
      DJ 1524 I=1.KETAS
       IF(CHANELINE BETAND(I)) GO TO 1524
                                                                             1NJN 495
       1F(BYTPE(1)+NF+0) GO TO 1524
                                                                             THON 496
       IF(DAYSTA-LT-SSTRT(I)) GO TO 1524
                                                                             1NDN 497
       IF(DAYSTA.GT.ESEND(T)) GO TO 1524
                                                                             THON AGE
       J=1+N54Tご
                                                                             1NON 409
                                                                             THOM 500
      I+IPARAI=SXCAIG
                                                                             INON 501
      PARNUS (NE ASM-E) = 61 NDX2
      {U}@AIN6#{[1,8=MAAA9N}0X5M9=10125x=10125A
                                                                             IN ME 502
       THARTSHAFFORD (NEARN-CIT)
                                                                             1404 503
```

```
GC TO 1325
                                                                           INON 504
 1524 CONTINUE
                                                                           1NON 505
C SET PARAMETER NUMBERS FOR BLASES & TIMING BLASES
                                                                           1NON 505
 1526 PARNOS (NEARM-7) =BINDX2
                                                                           1NON 507
      PARNOS (NEARM-E)=TINOX
                                                                           INDM 506
      PMPXQ(NPARM-6:1)=TPAR1
                                                                           1NON 509
C CORRECT RESIDUALS FOR CURRENT VALUE OF BIASES & TIMING BIASES
                                                                           1NDN 510
       IF(dINEX1.GT.0) PESID1=FESID1-BRIAS(BINDX1-INPARI+NSAT3)
                                                                           IN IN 511
       IF(TINEX.GT.0) PESIDI=RESIDI-TPARI#38IAS(TINDX-INPARI+NSAT3)
                                                                           140N '512
      IF (NALAS . 60 . 1) GU TO 1526
                                                                           INON 513
      PMPXO(NPASM-6.2)=TPAR2
                                                                           140N 514
       IF(BINEX2.GT.0) RESIDE=PESIDE=EBIAG(BINEX2-1NPAPI+NSAT3)
                                                                           1NON 515
      IF(TINDX.CT.0) RESID2=RESID2-TFAR2*BUIAS(TINDX-INPAR1+NSAT3)
                                                                           INON 515
C CCMPUTE RATICS TO SIGMA & DETERMINE IF MEASUREMENT EDITED
                                                                           INON 517
1525 RATIU1=0.00
                                                                           1NUN 518
                                            EAST1=cLANK
                                                                           INON 519
      IF(SIG1.NE.0.000) HATICI=DABS(FESID1/SIG1)
                                                                           1NON 520
      IF(NELIT1.EQ. O. AND. RATIC1. GT. EDIT) SIG1=+SIG1
                                                                           1NON 521
      IF(NED111+GT+C) EAST1=NCEDIT
                                                                           INUN 522
      IF(SIG1+LT+0+CO)EAST1=ASTRSK
                                                                           INON 523
      1F(SIG1.EC.0.000) NED(T1=0
                                                                           1NJN 524
      1F(NMLAS. 20.1) GO TO 1529
                                                                           1NON 525
      RATIO2=0.00
                                                                           INON 526
      LASTZ= CLANK
                                                                           INDM 527
      IF(SIG2.NE.O.CDO) RATIEZ=DABS(RESID2/SIG2)
                                                                           INON 528
      IF(NEDITE'SFO. O. AND. RATICE.GT. EDIT) SIGE=-SIGE
                                                                          · 1NON 529
  INON 530
      IFISIOR . LIOO . LUIEASTZ=ASTRSK
                                                                           1NON 531
      1F(5)62.50.0.000) NED172=0
                                                                           INON 532
      J=MTYPc+7
                                                                           INON 533
C SUM RESIDUAL FOR SECOND MEASUPEMENT INTO STATISTICS
                                                                           1NUN 534
      CALL STAINF(2,15TA.J.SIC2,RESIC2.P,15AT,P)
                                                                           1NON 535
      MINUEXERINDEX+1
                                                                           1NON 536
C SUM REGIDUAL & PARTIALS FOR SECOND MEASUREMENT INTO ESTIMATION
                                                                           1NON 537
      IF(SIG2.GT.C.CDC.AND.NFCN(ISAT).GT.1) CALL ESTIM(2.SIG2.RESID2.
                                                                           4NIN 538

    PMPAO(1,2))

                                                                           1NON 539
C REMOVE ELECTRONIC BLAS COMPONENT FROM STATISTICS & ESTIMATOR FOR
                                                                           INUN 540
C SECUNO MEASUREMENT
                                                                           INON SAT
      IF(NED IT 2.GT. 0) CALL BSCBMP(NECITZ, RESIDE, SIGE, DAYL, PMPXO(1.2).
                                                                           1NON 562
         LINKERT
                                                                           INON 543
      IF (MTYFE . EC. 4 . DR . MTYPE . EQ. 5) GC TO 1529
                                                                           INON SAA
                                              REPRODUCIBILITY OF THE
      UBS02=UbS027RA0
                                                                           1NON 545
      RESIDE=RESIDE/RSEC
                                              ORIGINAL PAGE IS POOR
                                                                           INUN 546
 1529 JENTYPE
                                                                           INON 547
      IXCMIS=(T+MRAPM)SOMRAP (C+24+CAIGM)41
                                                                           INON 5AR
      1STA2=CHANEL
                                                                           1NON 549
C SUM RESIDUAL FOR FIRST MEASUREMENT INTO STATISTICS
                                                                           1N/JN 550
      CALL STAINF(2.15TA. J.SIGI.RESICI.P. ISAY, ISTAZ)
                                                                           140N 551
      MINDEX=MINDEX41
                                                                           1NON 552
C SUM REDICUAL & PARTIALS FOR FIRST MEASUREMENT INTO ESTIMATION
                                                                           INOM 553
      IF(SIG1.CT.0.000.AND.NECN(ISAT).GT.1) CALL ESTIM(2.SIG1.RESID1.
                                                                           1NJN 554
         (OXUMA
                                                                           1NJN 555
C REMOVE SELECTRONIC PLAS COMPONENT FROM STATISTICS & ESTIMATOR FOR
                                                                           INON 556
C FIRST MUASUREMENT
                                                                           INUN 557
      IF (NEW IT 1401.C) CALL BECOMP (NEDITINGESIDINGIA) BAYI, PMPXO (LINGER) INDM:555
      IF (NUPRALL GO TO 1600)
                                                                           1NON 550
```

```
1NON 560
      SATSAT≈ « € ALSE »
                                                                           1NON 551
      GO TO (1540,1580,1585,1535,1530,1540,1540),MTYPE
                                                                           1NON 552
      K=MTYPE-14
                                                                           INON 563
      GU TO (1500,1500,1500,1585,1565,1535,1580,1200,1250,1250,1250,
                                                                           INON 554
         1260.1220.1240.1585.1585).K
                                                                           INON 555
C CONVERT UNITS OF RESIDUAL & OBSERVATION OF PAIRED MEASUREMENT FOR
                                                                           1NJN 555
C DUTPUT DNLY
                                                                           1NON 567
1530 CabOl=CaSC1*1000.D0
                                                                           1NON 568
      UB$U2=CB$C2*10C0.D0
                                                                           1NON 569
      RESIDI=REŜIDI#1000.DO
                                                                           1NON 570
      RE5102=RESIC2*1000.00
                                                                           1NON 571
      GU TO 1560
1535 Cd301=C8501*1.0D-3
                                                                           INON 572
                                                                           INON 573
      RESID2=RESID2*100.00
      GU TU 1560
                                                                           INON 574
 1540 CBSU1=035C1/RAD
                                                                           INON 575
                                                                           INDN 576
      RESIDI=RESIDIZESEC
1550 IM=MINDEX-2
C PRINT RESIDUAL & CUSERVATION FOR PAIRED MEASUREMENT
      ARITE (OUTP, 10103) IYMO, IHM, SEC, ISAT, NAME (ISTA), ATYPE (MTYPE), JBS01, INON-579
         RESID1, RATIO1, SAST1, ATYPE (MITYPE+7), UdSO2, RESID2, RATIO2, EAST2. INON 580
         ELEV(ISAT).14
                                                                           182 NCM1
      IF( NOT . F FRTGF) GO TO 1600
                                                                           1NDN 532
      IF($1G1.61.0.0DG) WRITE(DUTP.4.6000) PMPXO
                                                                           1MON 533
      IF($162.61.0.000) WPITE(GUTP,46000) (PMPX0(J.2).J=1.NPARM)
                                                                           1NON 534
     . . GO', TO 16.0 C
                                                                           1NON 595
C CONVERT UNITS OF RESIDUAL & OPSERVATION OF UMPAIRED MEASUREMENT FOR
                                                                           1NON 536
C DUTRUT DNEY
                                                                           1MOM 597
 1200 G@S01≃085E1*1.0D6
                                                                           INON 588
      RESID1=RESID1*1.006
                                                                           4 NON 589
                                                                           INON 520
      GC TO 1550
 1223 CHSO1=585C1+1.00E
                                                                           INON 591
     "HESID1 = RESID1 #1 + 009
                                                                           INDN 593
                                     REPRODUCIBILITY OF THE
                                                                          1NON 593
      GO TO 1390
 1240.03501=C35C1*1.00+3 .
                                     ORIGINAL PAGE IS POOR
                                                                           1NON 594
      RESID1=485101+1+00+6
                                                                           1NON 595
      GG TO 1550
                                                                           INON 576
 1250 UBSU1=03501/0FA0
                                                                           1NON 597
      RESID1=RESID1/DRSEC
                                                                           1NON 578
      GU TU 1550
                                                                           1NON 599
1 580
      09501=03501*1.00-3
                                                                           INON 600
      GU TO 15Ec
                                                                           100 NGM1
1535 -RESID1=KESID1*100+D0
                                                                           1NDN 602
 1535 SATSATEKKSAT.GT.O.AND.KKSAT.LE.NSAT
                                                                            INDN 503
 1530 IMPHINLEX-1
                                                                           IN IN -50A
      SNAMU=PCE
                                                                           INON 605
      IF(ISTA+NE+0) SNAME=NAME(ISTA)
                                                                            1NON: 606
& PRINT RESIDUAL & COSERVATION FOR UNPAIRED MEASUREMENT
                                                                            INUM 507
      walte (CUTF, 10104) TYYO, THM, SEC, ISAT, SNAME, ATYPE (MTYPE), DBSO1,
                                                                           INON SOS

    RUSIDIARATICIABASTI (ELEV(ISAT) (IM)

                                                                           1110N 609
      IF (MTYPE+CJ+26) GD TO 1592
                                                                           1413M 510
      IF (SATSAT) WHITE (DUTP: 47000) KKSAT
                                                                            110 NONE
      GG TU 1596
                                                                            INON 612
 1532 KEMIYPE-2c
                                                                            518 POM
      60 TO (1594,1594,1596,1596),K
                                                                            INON 614
 1594 WHITE (CUTF. 17100) SNAME, NAME (CHANSE) PRANDOT(1)
                                                                            1NON 515
```

```
INON 616
      GO TO 1598
                                                                           1404 517
 1596 J=K-1
                                                                           1NON 619
     WRITE (DUTP. 47200) J.NARE (CHANEL) . RANDOT (1)
                                                                           1NON 619
 1579 IF(PARTUF, AND *SIGI *GT * 0 * 000) WFITE(DUTP * 45000) PMPXO
                                                                           1NON 530
                                                                           INON .621
      1F(.NUT.FLOTSW) GD TO 1610
                                                                           1NON 522
      IF(DATASW) GC TO 1620
                                                                           1408 653
CHARITE GINARY RESIDUAL TAPE
                                                                           1NON 624 -
                                                                           1NON 625
      IF(ISTA. 61.0) INET=ISTANO(ISTA)/1000
                                                                           1NUN 626
                                                                           1NGN 627
      RATE1=UDSCOT(J.ISTA.RATE2)
                                                                           383 HORE
      HRSECHSEC
                                                                           INON 529
      IF(5151.LE40.000) RATIO(=0.000
                                                                           INON 630
      IF(S1G2.Lt. 0.000) RATIC2=0.000
                                                                           1NON 631
      ERSID1(1)=RESID1
                                                                           1NON 632
      ERSICI(2)=RATIOL
                                                                           1N JN 533
     · 665101(2)=84781
                                                                           INON 634
      ERSIDE(1)=PESID2
                                                                           1404 635
      ERS102(2)=FAT102
                                                                           1404 635
      6RSIC2(E)=RATE2
      WRITE(PLCTP) IYYD. I HM. EPSEC. NAME(!STA], ATYPE(MTYPE). 09501, BRSIDI. INBN 637
      • OBSUZ: ERSICZ: ELEV(ISAT). INEI: RANDOT: PÉRCUT
                                                                           1NUN 638
                                                                           1MOM 639
 1610 CONTINUE
                                                                         1NON 540
      IF. ("NO ( . CROSW) GO TO 1620
                                                                           1NON 541
C WRITE GROUND TRACK TAPE
      WRITE( CROTP : 10125) I (MC : FM : SEC : NAME( ISTA) - SATLAT( ISAT) -
                                                                            INDM 642
                                                                           1404 643
        SATECK(ISAT), SATH(ISAL)
                                                                           INON EAC
.162( IF(*NUT.3ATSW) GO TO 700
                                                                           INDM 665
      öRsêC=ScC
                                                                           1NON 645
C WRITE RV TAPE
   IF (RVIP.CI.O) ARITÉ (RVIP) DAYI, IYMD, IHM, BRSEC, (XYZEND(I.I), I=1.6), INDN 647
                                                                           1NON 648
      SATUAT(1), SATURN(1), SATH(1)
                                                                           100N 649
       IF(LINESX.GT.C)GC TO 1650
                                                                           INON 650
      "IF(XYZTP.NE.BUTP) WRITE(XYZTP.10302) TITLE
                                                                            1NON 651
       IF(KEPUZE) MRITE(KPURTP.10302) TITUE
                                                                            1NON 652
. 1550 IF(MUD(LINESX:48):NE.0) GO TO 1675
       WRITE(XYZTP,10300) APCNO, INFER, DUTIR, NPAGEX
                                                                            1NON 653
                                                                            1NUN 654
       IF (KEPLER) ARITE (KPLPTF, 44450) ARCHI, INNER, NPAGEX
                                                                            INON 655
      NPAGEX#NEAGEX+1
 1675 IF (MUD (EINESX, (). E0.0) WRITE (XYZTP, 10102)
                                                                            1NON 656
                                                                            INON 657
C WRITE CARTUSIAN SEMEMERIS
      WRITE(XYZIF,10301) [YMC:IHM:SEC:(XYZEND(J:1):J=1:6):SATLAT(1):
                                                                           1NON 658
                                                                          1NON 659
        SATESN(1) (SATH(1)
       IF ( . N JT . (CHETSK . AND . SIMOAT . AND . PCESTMI) GO TO 1630
                                                                           1NON 650
                                                                            1NON 661
       CO 1925 1=1.6
                                                                            1NON 662
       11=1+1:
C WRITE CARTESIAN PCE SIMULATED DATA ON UNIT 17 IN ORBIT GENERATOR
                                                                            1NON 653
                                                                            IN:)N 654
 C MEDE CHLY
  1523 ARTTE(17,10000) 11.17MD. THM. SEC. XYZEND(1.1)
                                                                            1NON 565
                                                                            1NON 656
  1670 TH(NSAT+L1+2) GO TO 1670
                                                                            1NON 657
       TARM.Sal cost LG
                                                                            11101 349
       L1N25X=L1N55X+1
  TERS ANTIE (AYZID, 1030A) (XYZEND(J. I) (JE) (D), SATUAT(I), SATUON(I), SATU(I) IMON EFF
                                                                           1404 570
  1073 E ( No 5x = L 161, 3X+1)
                                                                            1809 671
       IF ( . N. IT . K . FLOST) 60 TO 700
```

```
1NON 672
C WRITE KEPLER EPHEMERIS
                                                                          1NON 673
      IF(MOD(LINESX.6).FO.NSAT) WRITE(KPLRTP.10102)
                                                                          1NON 674
      DU 1550 J=1.NSAT
                                                                         1NON 675
      CALL ELER (XYZEND(1, J), AET NPM, 2, FALSE, P)
                                                                          INON 676
      DO 1500 1=3.5
                                                                          1NON 577
      12=1-2
                                                                          1NON: 678
1630 CALL OUTRID (AEINPM(I). IDEG(12).MIN(12).SECA(12).1)
                                                                          INON 679
      IF(J.NE.1) 60 TD 1685
                                                                          INON 690
      WRITE(KPLHTP, 46465) IYVD, 1HM, SEC, (AEINPM(I), I=1.2), (IDEG(I),
                                                                          1NSN 621
    ... MIN(1).SECA(1).1=1.4) .
                                                                          INDN 688
      IF(PCUSIN.CR. .NOT. (DRBTSW.AND. SIMPAT)) GO TO 1690
C WRITE KEPLER FCE SIMULATED DATA ON UNIT 17 IN DEBIT GENERATOR MODE
                                                                          180N 503
                                                                          1NON 684
C CNLY
                                                                          1NON 685
      Du 1040 I=1.6
                                                                          INCH 606
      IF(I.GT.2) AEINPM(I)=AFINFM(I)/DRAD
                                                                          1NON 637
      11=21+1
                                                                          INON 688
 1640 WRITE(17,1050C) 11.1YMD,1HM.SEC.AEINPM(I)
                                                                          INDN 639
      GU TO 1690
                                                                          INON 650
1685 WRITE (KOLETP, 44466) (AFINEW(1).I=1.2).(IDEG(1).MIN(1).SECA(1).
                                                                          143N 691
                                                                          1NON 692
 1630 CONTINUE
                                                                          1NON 693
     GU TU 700
                                                                          INON 694
C SUMMARIZE INFORMATION DERIVED FROM ITERATION.
                                                                          INON 695
 2000 IF(URBISH)60 TO 3000 ----
                                                                          1NJN 696
      IF(MINUEX.E0.1.AND.CORPI.CT.0.CO)GD TO 3000
                                                                          INUN 507
      IF(MINUEX.EU.I) CAUL FFROR(4.04R010)
      AFINEWINEGO, DI CALL BECOMPLO: FESIDI: SIGI: DAYI: PREXO: LINNER)
                                                                          1HON 695
                                                                          1NON 599
      0=607:00
                                                                          INON 700
      IF(.NJT.NCPONT) WRITE(CUTP.101C1)
                                                                          INON 701
C SUMMARIZE STATISTICS FOR LITERATION
                                                                          100N 702
      CALL SUMMEY (ARCNO.INNER. GUTER. LINNER, EDIT. NAME)
                                                                          1NON 703
 . . IF(NEUK(1).E0.1) GO TO 3000
                                                                         1NON 704
C LIST EPOCH AND LAST ELEMENT SET
                                                                          INUN 705
      CU 2440 I=1.12
                                                                           INON 706
      ORBELD(I+1)=OPESL4(I+1)
                                                                           1NON 707
 2640 CRUSELA(1+1) HELLMST(1+1)
                                                                           INON 708
      CALL ESTIN(3,F,P,P)
                                                                           1NON 709
      DU 2475 L=1.NSAT
                                                                           1NON 710
      IOUT=1
                                                                           1NON 711
      IP(SAlsw) IOUT=2
                                                                          INON 712
      DO 2300 1=1.1CUT
                                                                           1NON 713
      IUNIT=ITAFE(I)
      WRITE(IUNIF, 10106) E.ARCNG, INNER, OUTER, 18PYMO, ISPHM, 8PSEC
                                                                          1NON 714
                                                                          1NON 715
      WHITE (IUNIT, 10105) APRIGR, ELANK, (ELEMIN(U, L), J=1, 6)
 2300 ARITE(IUNIT.10103) PREV. SLANK, (GREELA(J.L), J=1.0)
                                                                          1NON ,716
C SAVE ULD REPLETIAN ELEMENTS AND COMPUTE STANDARD DEVIATIONS
                                                                          1NON 717
                                                                          1NON 718
       AMSPOS(1)=0.00
                                                                           1NON 719
       AMSPUS (2)=3.00
                                    REPRODUCIBILITY OF THE
                                                                           1NON 720
       11=6*{L-1}
                                                                           1NON 721
       11=11*(x014-1)-11*(11-1)/2
                                     ORIGINAL PAGE IS POOR
                                                                           1NUN 722
       16=5*(L-1)
                                                                           1NON 723
       CG 2450 I=1.6
                                                                           1NON 724
       11=1+10
                                                                           1NJN 725
       12=11+11
                                                                           INON 726
      15=1+(1-11/3
                                                                           1908 727
       PMSPUS(13)= +88FOS(13)+8691(12)
```

```
1HOM 723
      IF(SUM1(12).LT.0.0D0) WAITE(8UTP.45000) II
                                                                            INDN 729
      SOCLEM(I)=DSORT(DABS(SUNI(121))
                                                                            INON 730
11-MIGA+11=11 6045
                                                                            1NON 731
      RMSPOS(1)=DSOFT(DABS(FMSPOS(1)))
                                                                            1NON 732
      RMSPOS(2)=DSOFT(DABS(RMSPOS(2)))
                                                                            1NON 733
      PVRMS(1;E)=FMSPOS(1)
                                                                            1NON 734
      PVRMS(2, L)=RMSPOS(2)
                                                                            1NON: 735
C CALCULATE AUJUSTED ELEMENTS IN THE FORM OF KEPLERIAN ELEMENTS
                                                                            INON 736
      CALL ELEN(ELEMST(1,L),CRBELA(1,L),1,,FALSE,,P)
                                                                            INON 737
      EO 2470 I=1.5
                                                                            INUN 733
2470 GRBOIF (I)=GREELA(I.L)-GREELP(I.L)
                                                                            1NON 739
C LIST CURRECTED ELEMENTS AND UNCERTAINTIES
                                                                           1NON 740
      WRITE (CUTF, 10109) ACJUST, BLANK, (ELEMST(J.L), J=1.6)
                                                                           INDN 741
      J]=[L-1]*6+1
                                                                          . INDN 742
      J2=J1+5
                                                                            INDN 743
      WRITE(UU1F.10109) CHANCE, ELANK, (BELANK, (DELTA(J), J=J1, J2)
                                                                            INON 744
      WRITE(COTF: 10109) SD, SPELEM
                                                                            INON 745
      WRITE(OUTP, 10 HO) RMSPCS
                                                                            INON 746
      WRITE (CUTF, 10115)
                                                                            INON 767
      WRITE(UUTP.10116) APPICE. ELANK .(OFBEL(J.L).J=1.65).PREV.BLANK.
                                                                            INON 748
         (DREELP(J,L), J=1,5), ADJUST, ELANK, (ORBELA(J,L), J=1,6), CHANGE,
                                                                            ININ 749
         BEANK FELANK FORBOIF
                                                                            INUN 750
2475 WRITE(UUTP.10303) L.APCNO.(ELEMST(J.L).J=1.6)
                                                                            14UN 751
      IF(INPARILED, (#*MSAT)) GO TO 2503
C UPDATE & FRINT ADJUSTED ARC FORCE HODEL PARAMETERS
                                                                            INON 752
                                                                            1NON 753
      "BRITH (DUTS, 10801) ARCHC#INNERVEUTER
                                                                            INON 754
      11=0
                                                                            INON 755
      DU 2640 I=1.3
      CO 2640 L=1.NSAT
                                                                            INON 756
                                                                            INON 757
      IF(ADJF(L.1).LF.0) GU TO 2640
                                                                            INDN 758
      IF (MOD (11,45).EQ.1) WRITE (OUTP.10520)
                                                                            1434 750
      IF(E.EG.1) MRITE(SUTP.10102)
                                                                            INON 760
                                                                          INON 751
      J=ADDR(L.1)+6*NSAT
     + J1=1NDXNC(J)+J
                                                                            1NON 752
      IF(5UK1(J1).LT.0.000) WRITE(OUTP.45010) L.DRAG(I)
                                                                            1NON 763
      SIG1=050HT(DAES(SUM1(JI)))
                                                                            1NON 764
      CU(L.1)=28148(1+3*(L-1))
                                                                            INON 765
      #RITE(UUTF, 10505) L.DRAG(I),DRAGO(L.I).CD(L.I).DRAGSG(L.I).SIG1 - 1MUN 766
 EUNITACO SAES
                                                                            1NON 757
    - IF(II'+GT+C) I1=5*NSAT
                                                                            INDN 758
      IF(NGPARC+LE+C) GO TO 2503
                                                                            1NON 769
                                         REPRODUCIBILITY OF THE
                                                                            1NUN 770
      K1=0
                                         ORIGINAL PAGE IS POOR
      DRAMDA I = 1 . NGPARC
                                                                           100N 771
                                                                            1NON 772
      IF(MUD(11,5).NE.1) GO TO 2550
                                                                            1NON 773
      1F(K1.Ni.c.ANC.MOD(11.45).NE.11 GO TO 2645
                                                                            INON 776
                                                                            INON 775
      WRITE(OUTF, 10530)
                                                                            1NON 776
                                                                            INJN 777
 2643 ARITE (CUTE, 10102)
 2650 J=1NDXCS(1.1)
                                                                            1NON 778
      N=INUXC5 [2.1]
                                                                            1NON 779
      M=INDXC3(E.I)
                                                                            INDN 780
      C1=GPVAL(1)*GFSIG(1)
                                                                            1NUN 791
      CAMURVALC(1) # CASIG(I)
                                                                            INON 782
                                                                            1939 733
      18 (U. 16.1) CS (K. 4+1)=C1
```

```
INON 734
      1F(J.EG. 24) CS(31-N. 33-M)=CI
                                                                            1NON 735
      K=GPNC(I)
                                                                            1N-IN 785
     K=INDXNU(K)+K
                                                                           1NON 787
      SIG1=DSGRI(SUMI(K))
                                                                            1808 788
      SIG2=GP516(1)*SIG1
                                                                            1NON 759
2650 WRITE (GUTF. 10510) ICS(J) . N.M. C2.C1. SIG1. SIG2
                                                                            1NOV 790
C CHARECT & PRINT ACJUSTED BIASES
                                                                            1N3N 731
2503 17(N81AS.EQ.O) GO TO 2540
                                                                            1NON 772
      WRITE(UUTP, 1044C) ARCNO, INNER, CUTER
                                                                            1NON 793
                                                                            1908 704
    CJ 2504 I=1.NEIAS
                                                                            1NON 795
      13=1+3
                                                                            1NON 736
      IF(MOD(LINES, 5) + EQ+O) WRITE(DUTP: 10102)
                                                                            1NON 797
      LINES=LINES+1
                                                                            1NON 793
      II=INPAKI4I
                                                                            1NON 709
      11=1 NO XNC (11) +11
                                                                            INON FOO
      1F(SUM1(11).LT.0.000) WRITE(OUTP.45030)
                                                                            100 PCMI

    SIG1=DSQAT(DAES(SUM1(II)))

                                                                            1NDN 502
      CALL DATES(BSTRT(I), IYMD1, IHM1, SEC)
                                                                            1NON 203
      CAL_ DATES(BSEND(1).IYMD2.IHM2.SEC) .
                                                                            1NON 604
      CI=TIMING
                                                                            1MON 805
      Il=BYTPS(I)
                                                                            1404 506
      IF(11.NE.C) Cl=ATYPE(11)
                                                                            INON 607
      J=SSTANU(1)
                                                                            SCS NCMI
    1+(I) 35TY6=$1.,
                                                                            1NON 500
      1F(11.LT.15) UNIT=UNITS(12)
                                                                            1NON E10
      16([1.Ed.27] UNIT=UNITS(1)
                                                                            118 RON1
      IF(II.LG.20) UNITHHERTZ
                                                                            1NON 812
      IF(I1.GT.20) UNIT=UNITS(A)
 250+ WAITE (GUIF, 10/50) NAME (J) . ISTANO(J) . C1, BIASO(I) . BBIAS(IB) .
                                                                            ELD NONE
       UNIT, EIASSG(15), SIG1, TYMD1, THM1, TYMD2, THM2
                                                                            1NDN 814
                                                                            190N 815
C INCREMENT ITERATION COUNTER
                                                                            1NON 316
 2540 IF(LINNER) GO TO 3000
                                                                           11NUN 817
      IF(FITER) GO TO 2580
C CHECK FUR INNER ITERATION CONERGENCE
                                                                            1909 812
      IF(ABS(KMSLST-RMSTOT)/FMSLST.LF.CONVRG) LINNER#.TRUE.
                                                                            1NON 319
      IF( * NUT * LINNER) GD TO 2590
                                                                            111011, 620
      WRITE (OUTF, 46500) APONO, INNER, CUTER, CONVRG
                                                                            1804 821
                                                                            IN IN 822
      CALL EFRUR(10.CARDID)
                                                                            140% 653
 2580 INHER=INNER+1
      LINNER=(LINNER.AND.INNER.GE.INNMIN).GR.INNER.GE.INNMAX
                                                                            TMCH 926
                                                                            1NON 325
      GO TO 650
                                       REPRODUCIBILITY OF THE
 3000 IF( , NOT , CRUTS %) 60 TO 3010
                                                                            1NON 026
                                       ORIGINAL PAGE IS POOR
      1F(RVTP+E6+0) GO TO 3010
                                                                            1NON 527
C WRITE LAST RECERD FOR RY TAPE?
                                                                            1110% 822
                                                                            1404 629
      ERSEC=ERSEC
                                                                            TRÚM 930
      CAYSTA=3554CO
      WRITE (RVYP) DAYSTA, 15PYND, 16PHN, HFNGC, (BLEMIN(1,1), 1=1.5)
                                                                             1807 P31
                                                                             1NON 832
        .SATLAT(1).SATLON(1).SATH(1)
                                                                             INDN 633
      END FILE BYTE
 3010 IF(SAISH) WRITE(XYZTP+10102)
                                                                             1909 374
      IF (SIMUAT: AND: OUTER: E0:1) ENDFILE 17
                                                                             1004 635
                                                                             INON 336
C PRINT AND BUNKARY MAGE
                                                                             1909 337
      CALL TYPERU (COAYD. WINDEX, ARCHO, CUTE 3, PV345)
      IF(14844460+0) 60 TO 3020
                                                                             FACH 833
                                                                             1434 635
      IF ( . WUT . LCUTER) GO TO 4000
```

```
1NON 840
      IF( NUT FLOTS W) GD TO 3016
                                                                           INON BA1
      WRITE(FLOTF) (BLANK J=1:16)
                                                                           1NON 842
      END FILE FLOTE
                                                                           EVS NEWL
C PUNCH ADJUSTED ELEMENTS OF DRAG & SOLRAD
                                                                           AAS MONE
 3016 PUNCH 44500.ARCNO.INNER.CUTER.IYREF.IEPYMD.IEPHM.EPSEC.
                                                                           1NON 645

    c((dleMST(1+L),I=1,6)+L=1.NSAT)

                                                                           1 NON 846
      DD 3019 L=1.NSAT
                                                                            1NON - 847
      IF(B0(L).L5.0.0D0) GO TO 3019
                                                                           INDM 643
      IF(CD(L, 1), GT, 0, 000) PUNCH 44510, DPAG(1), L, CD(L, 1), DRAGSG(L, 1),
                                                                            1N IN 349
         CD(L.2).DRAGSG(L.2)
      IF(CU(L.3).GT.0.000) PUNCH 44510,DPAG(3),E,CD(L.3),DRAGSG(U.3)
                                                                           1MON 350
                                                                            143N 851
      FURCH 44530, L. ASAT(L), MSAT(L)
                                                                            1NON 852
 3019 CUNTINUE
                                                                            1NON 853
 BUNITADS CSOE
                                                                            1NON 854
 4000 ESTSTA=MINDEX
                                                                            INON SES
      IF(UUTER.EG.1) INNMAX=MAX2IN
                                                                            1NON 856
C STURE UPDATED AND PARAMETERS
                                                                            INUN 957
      CALL DATAFD (AFCNO. FALSE. . TRUE. . TRUE.)
                                                                            1NON 251
      IF (URNTSA) GC TO 4055
                                                                            INON 959
C PRINT ADJUSTED PARAMETER VARIANCE-COVARIANCE MATRIX
                                                                            1NON 860
      WRITE(OUTF:45000)
                                                                            100 VCMI
      Kl=-5
                                                                            IN 34 862
      J1=0
                                                                            1NON 663
      CU 4050 L=1.NSAT
                                                                           THON SEV
      K1=K1+6
                                                                            1NJN 665
     - L1=K1+1
                                                                            INDN SAR
      L2=K1+5
                                                                            1808 867
      WRITE(UUTF+101Ub) L+AKCNU+(TTL(J)+J=Li+LZ)
                                                                            140H 868
      00 4050 J=L1.L2
                                                                            1NON .669
      11=11+1
                                                                            1NON 870
      12=J1+5+K1
                                                                          INON 671
      WRITE(OUTF.10111) TTL(J).(SUM1(K).K=[1.12]
                                                                            1NON 972
 4050 U1=U1+N01P=U
      IF(NSAT.GI.1) WRITE(GUTP. (8000)
                                                                            1NDN 973
                                                                            INON 574
      CALL CORRCE (SUMI. NPAFAM, NDIM, INNER, TTL)
      IF (BURBIALTADADO ADRAANDIALITER)SO TO 4060
                                                                            INDV 975
40ラジ
      1F(DAY0-LC991.GT.0.00100) INITAL=. TRUE.
                                                                            1NON 376
                                                                            1NON 877
      TUREFUELBERT. CT. 1.000
      IF(TURSED) CRERT=0PSPT-1+000
                                                                            1NON 676
                                                                            1NON 979
      TUREFT = TUREFO
      IF(105AT(1).CT.0) ISATIC(1)=105AT(1)
                                                                            THUN BRO
      MISL JG(2)=0
C WRITE OPTIONAL ORBITARE ON LAST INNER ITERATION OF LAST CUTER
                                                                            INON 982
                                                                           1NON 893
C ITERATION
                                                                            INDN 984
 4056 CALL URBI (DROFT)
                                                                            1NON 635
 40AC ARCHOMARCNOTE
                                                                            140N 886
      [F(NGPARCALE+0) GO TO 4090
C REPLACE ARE (EURDIENTIAL COSFFICIENTS WITH APRIORI VALUES
                                                                            1939 567
                                                                            1NON 833
      LU 4030 I=1. NGPARC
                                                                            1NON 889
      J=INUX(S(1.1)
                                                                            THON 300
      N=INDXCS(2+I)
                                                                            180 NOM1
      M=INDXCS(E.T)
      CI=3PVACOLI) = CESIGLI)
                                                                            140M 892
      IF(U.10.1) CS(A:M+1) =C1
                                                                             1N34 853
                                                                            ACC POPL
 1000 18(3.-d.2) 08(31-4.33-Y)=C1
 SOLC IF (ARENO. CT. NAHOS) GO TO 4100
                                                                             THON BOK
```

	•	•
GO TU 30 C		INDN 846
C STUP IF NU CEMMON PARAMETERS AD.	DISTED OR IF R-MATRIX CUTPUT	1NON 817
4100 IF NO CLAMON HARAMETERS AD-	n.a.and.nttDen.eq.6) STOP 1	1NON 828
	0.000	4NON 399
IF(BMAI) STOP 6	0	1NON 900
ENOFILE SCRO		100 NCN1
REWIND SCAC	·	1NON 902
RMSPRV=RMSALL NMALL=3*NMAST+NGPCOM+NTIDEN		1NON 903
C DATAIN STATISTICAL SUMMARY FOR	41. 4965	1NON 904
CALL STAIRSTICAL SOUNART FOR	.0.0.0.0)	1NON 905
		1NON 905
C PRINT RESIDUAL SUMMARY FOR ALL	ANG I	1HJN 907
MRITE(OUTP,20111) CUTER		1N/1N 508
EO 4120 I=1.7	P.2C120) ATYPE(I).NDALL(I).TYPRMS(I)	1NON 909
	FIZCIZO/ WITH ECC. MISSINGLE CO. C.	1408 910
J=1+7	P.2(120) ATYPE(J) NOALL(J) TYPRMS(J)	1112 11011
4120 IF(NURLE(I)+NUALE(U)=(00+0)+	was refoure. 101021	1MON 912
	#X1 (E1601) 1.01021	1NON 913
DU 4130 I=16,30	٥	1909 514
. IF(NOALE(I).LE.0) GO TO 413	MOALL(I).TYPEMS(I)	1474 915
	NOWCE (TYTT) MADE IT	1434 515
ARITE(CUTF.10102)	•	140N 917
4130 CONTINUE WRITE(OUTF, 201301 NYALL, FMS	ALL	1NUN 918
IF(LOSTER AND ALITRES) CO TO	13220	1NON 919
	10220	1NJN 530
ESTSTA=NMAST . C CALCULATE AUJUSTEE COAMON PARAM	FTFE VALUES	1NON 921
CALL ESTEM(ALBAPAP)		INCIN 922
C PRINT ADJUSTED CLAMON BARAMETER	•	1404 853
CALL COMADUCOUTER)	•	199N 92A
CALL COMMODICATION	FOR ADJUSTMENTS TO COMMON PARAMETERS	1404 925
. 2620 CALL UPDATE (NARCS OUTER , NET	ART.SUM1.DELTA.	1101/1925
		1NON 927
IDIM=NGPCEM+3#NMAST+MTIEN	• .	. INDM 658
IST=INDXNC(DSTART)+NSTART		1000 900
C PRINT COMMEN ADJUSTED PARAMETER	VARIANCE-COVARIANCE MATRIX	1NON 930
CALL CORREL (SUMI (1ST) + 191M)	(DIM.OUTER.TTL(NSTART))	189 931
1F(LOUTER) GO TO 10220		256 NON1
CUTEK=CUTER+1		100H 933
C CHECK FOR OUTER ITERATION CONVE	PRENCE AND INCREMENT ITERATION	1808 BCRI
C CCUNTUR -		IMON 935
IF ((RMSPRV-RMSALL)/RMSPRV.L	E.OUTCON) LOUTER=.TAUE.	INON 935
IF(OUTLR.ES.MINDUT) LOUTER:	==FAUSE=	143M 637
LOUTER=LCUTER.CR.OUTER.GE.	MAXOUT	1N0N 030
ARCNU=1	•	1808 939
C REWIND SCHATCH FILE	1	1NON 940
HENING SCRA		140 MOM1
HEWIND SCAC	REPRODUCIBILITY OF THE	1NON 942
REWIND FUTP	ORIGINAL PAGE IS POOR	1400 643
IF(NOT START W) SU TO 200	ATTION I WOL TO LOOK!	14)4 675
C REALKO JUIPOT RESTART TAPE	•	1NON 945
END FILE CUTSTA		1434 646
HEWING OUTSTR		1809 947
GU 10 200		1979 958
10220 IF(*NUT*CHD5*) STUP 2	•	1904 945
C ENCHILL GROUNE TRACK TAPE		1NON 930
Charles Capte		1909 951
******	•	

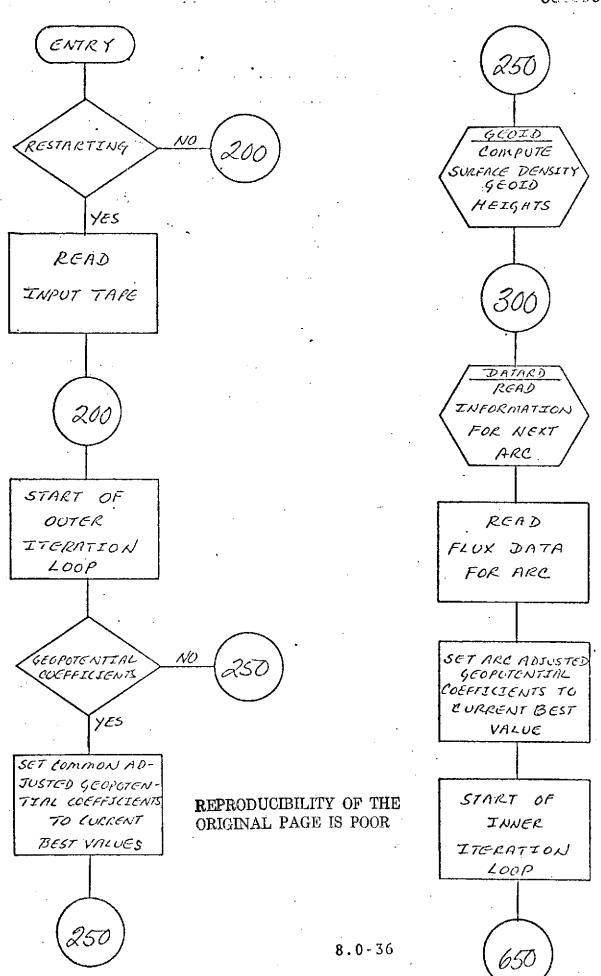
REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

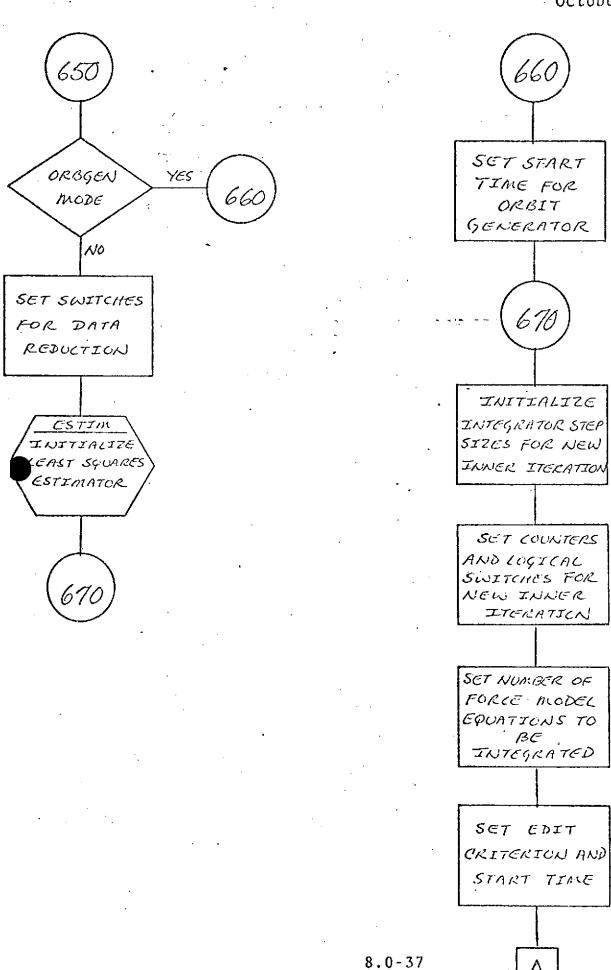
```
STUP 3
                                                                                                                             INON 952
C FORMAT STATEMENTS
10001 FURMAT(JC.14.F7.4.12.11.2FF2.0.18.2(16.14.0PF7.4).17.11.48)
                                                                                                                             INUN 554
10125 FURMAT(IC.2X,14,2X,F7,4,2X,A6,2X,F15,8,2X,F15,8,2X,F15,5)
                                                                                                                             INUN 955
                                                                                                                             1NON 956
19440 FURMAT(181,19%,3HARC,13,46H ADJUSTED BARAMETER SUMMARY FOR INNER 11NON 957
         ITERATION 13:15H OF CUTER ITERATION 12/ 1H0:10X,7HSTATION 8X.
                                                                                                                             1MON 558
             - 9HPAKAMETER:8X:15HPARAMETER VALUE:13X:
                                                                                                                             INON' 959
               19HSTANDARD DEVIATION:4X:24HCDVERAGE --- YYMMDD HHMM/9X:
                                                                                                                            1NDN 950
               12HNAME NUMBER. 7X. 4HTYPE. 93. BHA PRIORI. 3X. SHADJUSTED. 11X.
                                                                                                                            INDN 961
               WHA PRIORI, 3X, BHADJUSTED, 7X, 5PBCGIR, 9X, 3HENDZ)
                                                                                                                            1NON 962
10450 FURMAT(3x, A6, 16, 5x, A6, 5H BIAS, 2x, 192011, 3, 2x, A6, 2011, 3, 2x, 2(18, 15) INON 963
                                                                                                                            1NON 954
10100 FURMAT(161,28x,3MARC,13,30H RESIDUALS FOR INNER ITERATION,13,
                                                                                                                            1NON 955
               19H OF OUTER ITERATION:12:15x:4HPAGE:14//5x:12HTIME OF DATA:
                                                                                                                            1MON 956
               7X. CHSAT. 2X.
                                                                                                                            INCN 967
               7HSTATION, 42.11HMEASUREMENT .9X. SHRESIDUAL.3X.5HRATIO.6X.
                                                                                                                            INON 968
               11HMEASUREMENT.8X.8FSESIDUAL.3X.SHRATIO,3X.AHCLEV.5X.AHMEAS/
                                                                                                                            INCM 969
               1X. JJEYYMMDD HHMM SE.SSSSS TRKED NAME.4X. GHTYPE.6X. GHVALUE.
                                                                                                                            113N 970
               BX.5H(C-C).6X.10HTG SIGMA
                                                            1YPE,6X,5HVALUE,7X,5H(0-C),4X,
                                                                                                                             INON 571
               14HTG SIGMA (DEG),5x,2FNO)
                                                                                                                            1N 14 572
   0101 FURMATITO UNITS FOR INFORMATION ... LINEAR!.6X.
                                                                                                                            INON C73
                *MEASUHEMENTS — KILCMETERS*,5X,*RESIDUALS — METERS*/
                                                                                                                            1NON 374
               26X. 'ANGULAR'.5X. 'MEASUREMENTS - DEGREES'.8X.
                                                                                                                            1NON 575
                "RESIDUALS - SECONDS OF ARC1/23%,
                                                                                                                            1NON 976
                *LINEAR RATE MEASUREMENTS - METERS/SECOND RESIDUALS -
                                                                                                                            1NON 577
                *CENTINETERS/SECOND*/28X,*TIME*,8X,
                                                                                                                            1NDN 525
             I "NEASUREMENTS - MICROSECONDS
                                                                    RESIDUALS - NANOSECONDS*/23X.
                                                                                                                            INON 979
               *FRINGE RATE MEASUREMENTS - MILLIHERTZ ! ISX.
                                                                                                                            1NON 930
                *RESIEUALS - MICROHERTZ*/
                                                                                                                            182 NON1
               35X*DIRECTION COSINES ARE SCALED BY A FACTOR OF 1000*/
                                                                                                                            1NON 932
               BOX. ! ECCENTRICITY IS SCALED BY A FACTOR OF 10000001)
                                                                                                                            190N 583
10102 FORMAT(1X)
                                                                                                                            1NON 934
10103 FURNAT(1X:10:15:F10:6:4M SAT:12:1X:A7:1X:A6:F12:4:F13:3:F8:2:A1: : 1909 935
               2x+A5+F11+4.F13+3.58+2.A1.F7+2.13)
                                                                                                                            AND NEWL
10104 FURMAT (1X+16+10+610+6+3H SAT+12+1X+47+1X+46+F12+4+F13+3+F2+2+41+
                                                                                                                            180N 537
               41X+F7+2+18)
                                                                                                                            1NON 388
1910d FURMAT(1F1,17X,9HSATELLITE,12,AH ARC,13,
                                                                                                                            190N 989
               33H RECTANGULAR COURCINATE SUMMARY FOR.
                                                                                                                            1NON 990
               16H INNER ITERATION (13,19H OF OUTER ITERATION (12)
                                                                                                                            1NON 991
                      IFC. 22x. 3AHEROCH OF FLEWENTS - YEAR, MONTH, DAY, 17, 3x,
                                                                                                                            INDN OOR
                      16FHOUR.MINUTE.SECOND.15.FR.4/1HC.33X.1HX.12X.1HY.12X.1HZ.
                                                                                                                            tabh cas
                      10x, 4HXF0)T, 0x, 4MYDET 9X, 4HZDDT/23X, 3(10X, 3H(M)), 1X, 3(3X,
                                                                                                                            INCH 995
                      SF (M/S))/1X)
                                                                                                                            INUN 935
10105 PURMAT (exisas ilxi3F13.1.3F12.4/1x)
                                                                                                                            INUM 996
10110 FUR NATIONAL CONTRACTOR FOR THE PROPERTY FOR THE                                                                                                                             1N IN CO7
10103 FURMATCHICZEX: SATELLITE 1.12.4H ARC: 14: VARIANCE/COVARIANCE 1.
                                                                                                                            1404 979
               *MATKID OF COURTINATES*/1HO.20X.AS.9X.AS.3X.AS.9X.AS.9X.A6.
                                                                                                                            1409 999
               *X.As I
                                                                                                                            INDMESOO
10111 FURNAT (150, 9X, 46, 1X, 196015,7)
                                                                                                                            I CC TWDWI
10115 FURMAT (THEZATX25HKEPLEFIAN ELEMENT SUMMARYZIHO.33X.THA.13X.THE12X.TMOUTOOF
                      101. TX. 3348A ASC NODE FRG PERIGEE MEAN ANDMALY/31X.
                                                                                                                            1.809111003
                      SH (METERS) +1 (X+4(4 X+9H(DEGREES))//1X)
                                                                                                                            INDNIOOF
1011c #GR4AT(G):2A0:F10:1:F12:9:4F13:5/1Y)
                                                                                                                            INDNIOSE
10501 FURNAT (161.1 : X. 3649 C. 13.
                                                                                                                            1NON1006
               SEH ASSUSTED FORCE MODEL PARAMETERS FOR INDER ITERATION 13.
                                                                                                                            150351007
```

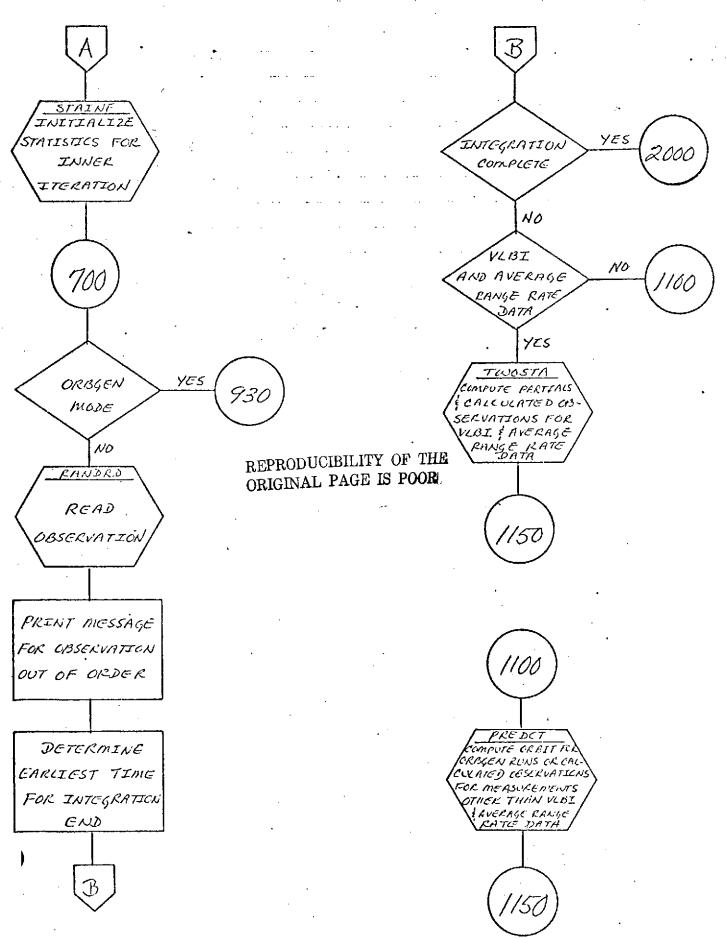
CAMOTE AC PAGE IS POUR

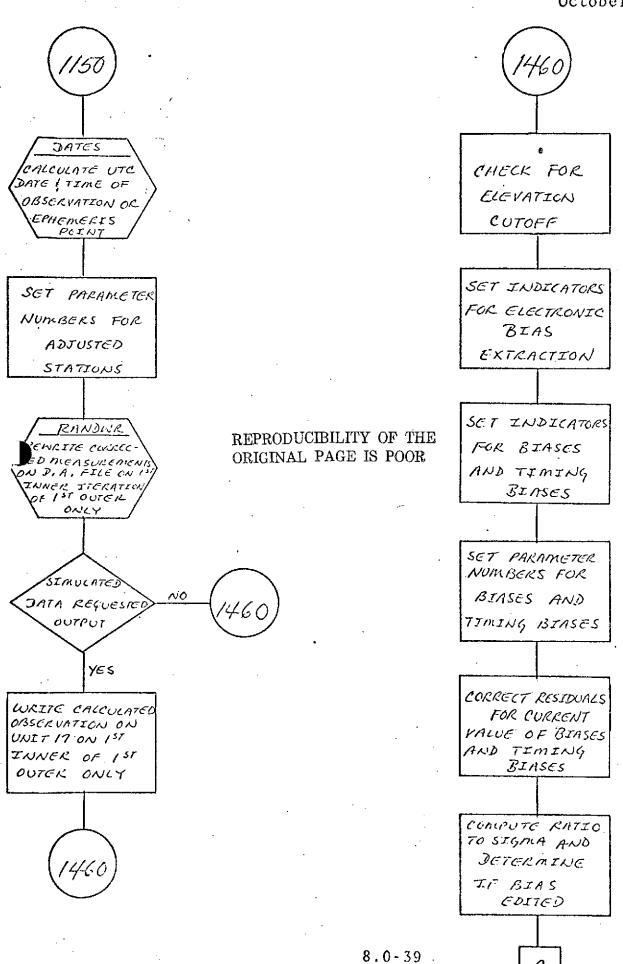
NONAME Page 21 of 30 October 1972 REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

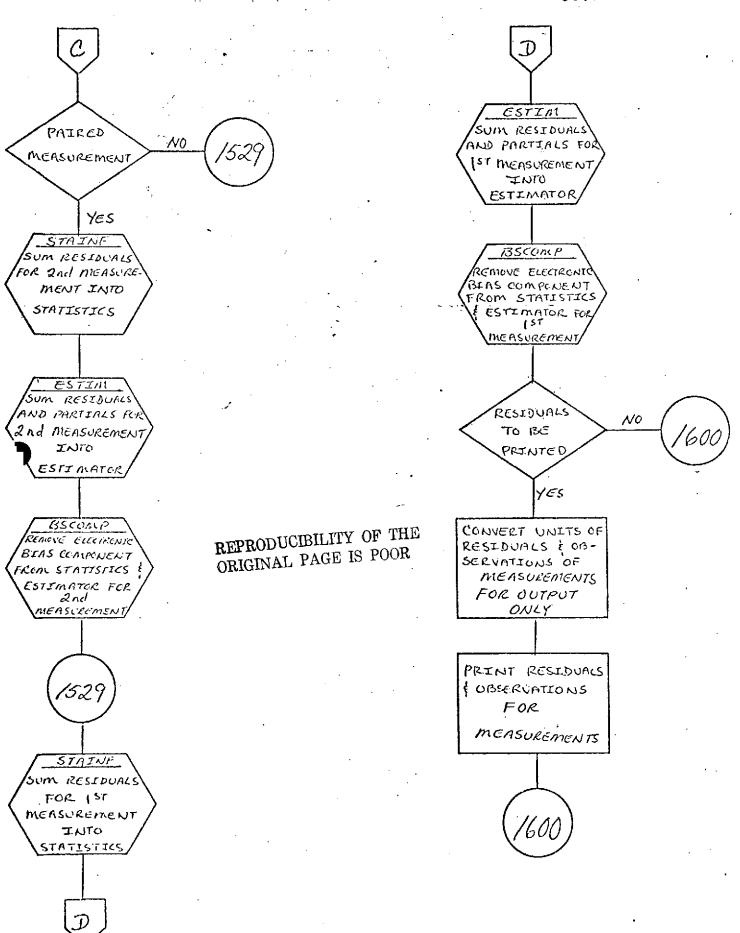
· ·	
. 15H OF OUTER ITERATION. (3)	8001HGH
10520 FUNNAT (INC.40X, 33MSATELLITE PHYSICAL PARAMETERS ADJUSTED//20X+	1 NO N1 0 0 °
. LIHCUEFFICIENT, 19X, SHVALUE, 21X, 13HSTANDARD DEVIATION/41X.	18081010
. BHA PRIORI.7X. BHADJUSTED. 10X.BHA PRIORI. 8X. BHADJUSTED)	11011KIN1
10530 FORMAT (INC. 37 X. 44HGEOPETENTIAL RESONANCE COEFFICIENTS ADJUSTED//	1NON1 012
20X, 11+COEFFICIENT, 19X, 5HVALUE, 21X, 18HSTANDARD DEVIATION/ 11X,	111201013
. WOHA PRIORI, 7X. RHADUUSTED, 6X. 28HRATIO TO A PRIORI ADJUSTED)	141014014
10505 FURMAT(19),3HSAT,12,1X,48,015,6,015,6,2015,1)	1NON1 015
10510 FORMAT(22%,A),1H(.12.1H,.12.1H).021.6:015:6:1X.2016.4)	1N0N1010
10202 FURNAT (JECSTATION . 15 . SH AT TIME . 17 . 15 . FR . A . 18H NOT IN TIME URDER)	-
10300 FURNAT (1F1, 25%, 3HARC, 13, 31H SATEULITE EPHEMERIS FOR INNER .	18081010
A LAW COMPANY OF A ROLL OF SUPERS APPOSITIONS TO APPLACE	10001019
THE OF BITT THE LEVEL TO THE TOTAL THE CONTROL OF T	14001020
 13/17H0 TIME OF DATA; 11X; 1HX; 12X; 1HY; 12X; 1HZ; 5X; CHADDI; 7A; 4HYDOT; 7X; 4HZDOT; 4X; 33HGEODETIC LAT LONG (E) HEIGHT/ 	1N:)N1 021
	19081022
• 20H YYMDO HHMM SS. SSSS. 6X. 4H(KM) . 2(9X.4H(KM)) . 1X.	INDN1023
3(6X,5)(Y/S)),5X,2(9)(CEGREES),2X),4X,4H(KM))	INON1024
10301 FORMAT(1X,16,15,69.43P3F13.4.0P3F11.4.F12.6.F11.53P3F13.4.	111011025
• 0P3F11.4.F12.6.F11.E.=3PF13.A)	10001025
10304 FURMAT (20x,-3P3F13.4.0P3F11.4.F12.6.F11.53PF13.4)	1HON1027
10302 FURNAT((1H1,12(/1H0),3(/20X,20A4)))	INDNIOES
10303 FORMAT (1FC.44 X. PHSATELLITE, 12, 30H CUFRENT BEST ELFMENTS FOR ARC.	1NDN1029
• 13//	14041030
4,4),1HX,25X,1HY,25X,1HZ//	
a 30x,3D24.15//42x,4HXD0T.22X,4HXD0T.22X,4HZC0T//30X.3D24.16	10011031
10600 FURMAT(1x,12,16,14,F3,4,D24,15,10x)	
20111 FURMAT (1H1.32X. TOTAL FESTOUAL SUMMARY BY MEASUREMENT TYPE FOR ".	130N1 030
1 'CLTER ITERATION', ISZ	10001035
2. INC. 38X. I INMEASURE MENT, FX. I ONN INMER OF .	14041036
3 SEKEIGHTED. BX. 8 HKE IGHTEC/IH . 41X. 4HT YPE. 16X. 9HRESIDUALS.	1NON1038
4 16x(3HFM5/)	1NON1037
20120 FURMAT(1H .40%.A5.15%.I5.15%.F10.3) 20130 FORMAT(1H .43%.11HRMS FOR ALL.15.22H WEIGHTED MEASUREMENTS.F10.3)	•
20130 PORMAI(IF 43X411HAVS FOR ALL, 15:22H WEIGHTED MEASURE CONTROL TO 10:37	1100 100
44470 FORMAT(1H0,7%,00HGFOPOTENTIAL FESCHANCE COEFFICIENTS ADJUSTED/1H0 1 11HCOEFFICIENT,10%,6HA FRIORI,16%,3HADJUSTED/1B%,5HVALUE,	140311 40
	10011042
Z ZATI CONTRACTOR CONT	10011002 5/01001
- 44475 FURMAT(2X,41,1H(.12,1H,.12,1H).4X,3(2X,510,4),1X,F10.4) - 44470 FORMAT(1H1,33X,3HARC,13,44H SATSULITE KEPLERIAN EPHEMERIS FOR ITE	
ATIUN. 13,25%, AHPAGE: 13//5%, AHTIME: 17%, 154, 14%, 14%, 14%, 181, 11%,	34011041
*ITHRA ASC NUDE: 5X: TTHARG PERIGER: EX: TZHYFAN ANUMALYZIX: *T9HYY4V_D HHMM SS: 5555: 6X: 8H(METERS): 17X: 4(ZX: 15HDEG MM SS: 355S5)	
	INDNI 948
44485 FLRMAT(1X.16.15.F6.4.F1C.4.F15.11.4(2X.213.F9.5))	10001000
A4416 FORMAT(20),F16.4,F15.11;4(2X212;F5.5)) A450(FORMAT(*ARC*,I3;* ADJUSTED PARAMETERS FOR INNER*,I3;* OF CUTER*,I	
*	10001030
	14001052
4451C FDRMAT(Ad:11:3X:2F15:R:2D15:0)	1NON10.2
45000 FURNAT(10424*********** NEGATIVE ARGUMENT TO DOORT FOR ELEMENT!.	INDN1054
	10001055
. IZ. (\$4% text vect) - 65010 FURNAT(!C:enhasksnams NEGATIVE ARGUMENT TO DSORT FOR !:A6; ! 5*******	
45030 FURSHT (FOR # * * * * * * * * * * * * * * * * * *	
	14041056
### ##################################	18081.039
a comparation of the second comparation of t	10301550
• FERCENT OF THE RMS FOR THE PREVIOUS ITERATION OF THIS ARC.*!	-
A7000 FORMAT(164,77%,24HTRANSPONCER RELAY BY SAT-12)	10001062
- A7000 FORMATOTHER, 773, 24MINANOMUNICH REBAT ME SAMELET - A7100 FORMATOTHER, 783, 28MINANOMUNICH REBAT A1M7, A7, 7MCLLEY F, FO. 2, 1M11	1807/1083
67200 FULLUATE (164,77%) [1,10H WAY THANSHITTER, 2X, AT, 7H(ELEV = +F5,2,1H)]	100000 0000 100000000000000000000000000
	14/04/10/5
43000 FURNAT(1F1)	10001065
LNJ	- *** *** *** **** ****

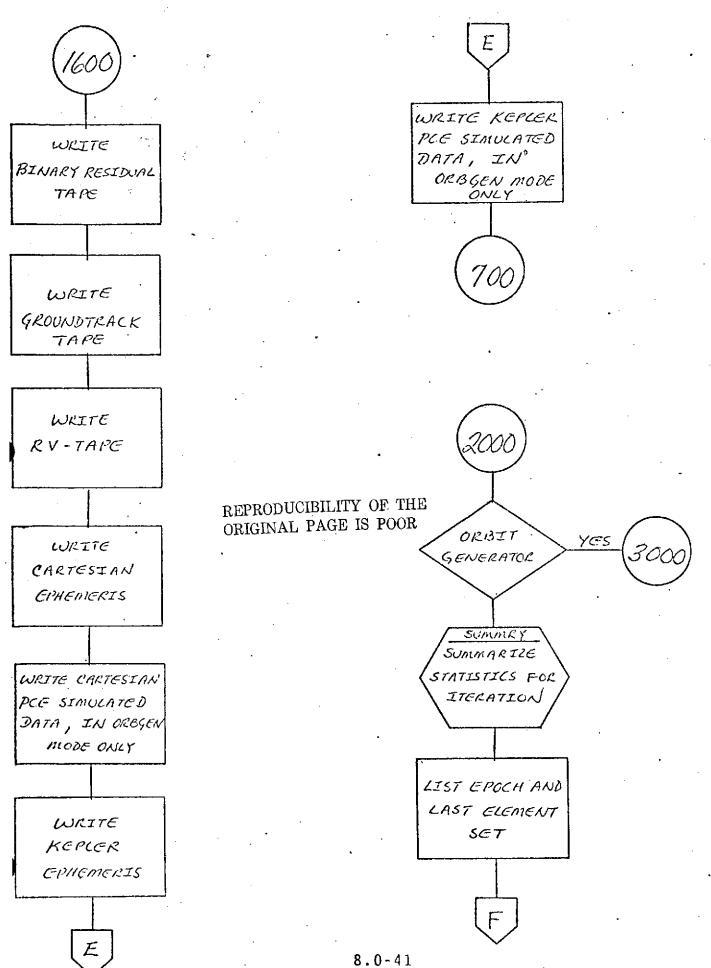


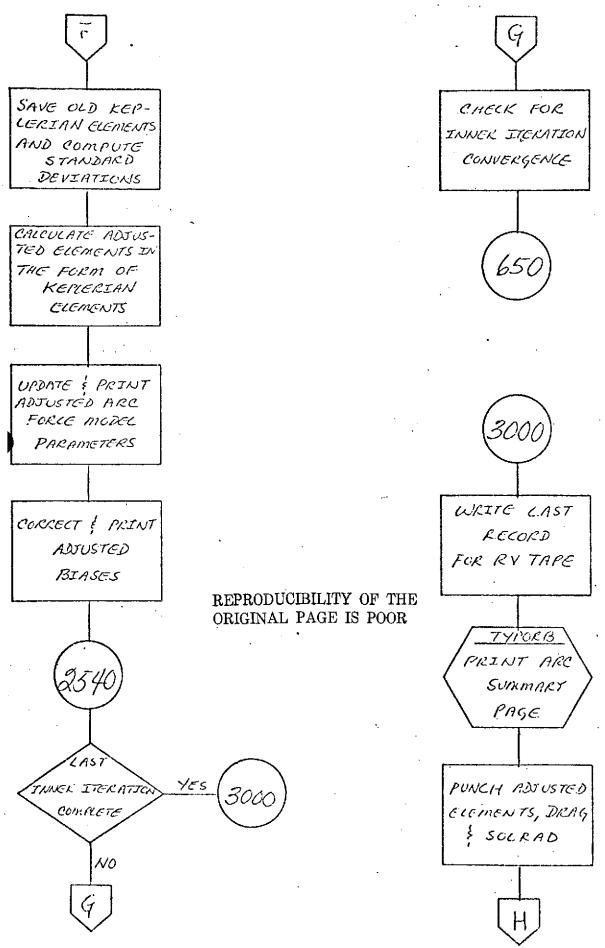


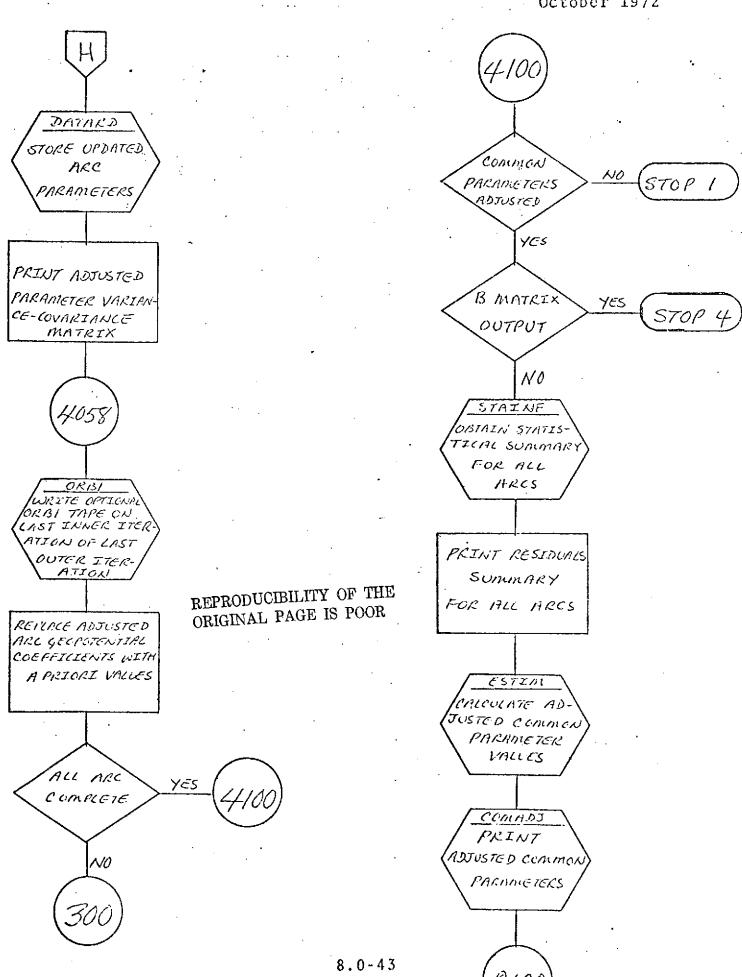


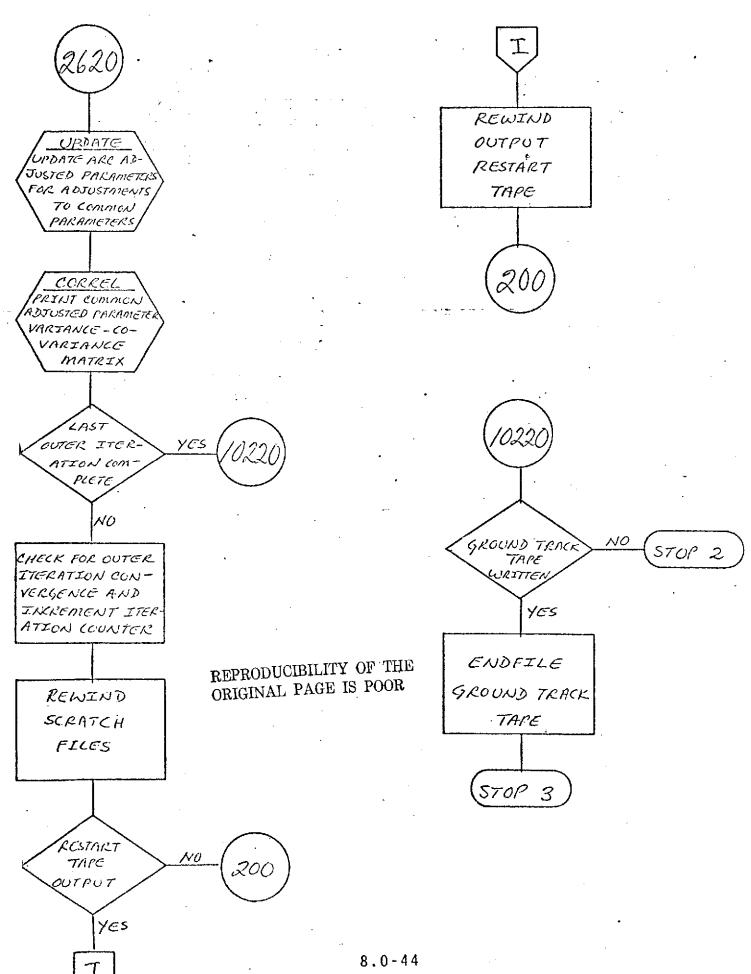












NAVE	ADDYMD
PURFCSL	TO ADD OR SUBTRACT DAYS FROM A DATE IN THE FORM YYMMOD AND TO PREVIDE THE USER WITH THE NEW DATE
CALLING SECUENCE	CALL ADDYMD (I YMD + IDAY)
SYMBOL TYPE	DESCRIPTION
I YND I	INPUT AND OUTPUT - SIX DIGIT DATE IN THE FORM YYMMDD
IDAY, I	INPUT - NUMBER OF DAYS TO BE ADDED OR SUBTRACTED FROM INPUT TAPE
SULFICUTINES USED	NONE
CCMMEN BLOCKS	MONTHS
INFUT FILES	PACH
CUTPUT FILES	NONE
RESTRICTIONS	CANNOT PROCESS MULTIPLE CENTURIES

COMMONYMONTH(13,2) 1SUB(1Y)=MINO(MCD(1Y,4),1)+1 C SEPARATE YEAR/WONTH/DAY 1Y = 1YMUNCCOO 1K = 1Y*1CCOO 1M = (1YMC-1K)/100 1D = 1YMC-1K-1M*100 LY=1SUB(1Y) C COMPUTE ELAPSED DAYS FROM JANUARY C.O OF CENTURY 1D=(1Y-1)*35525/100*MONTH(IM.LY)+1D+1DAY C COMPUTE NEW YEAR/MONTH/DAY 1Y=(1D-1)*100/36525+1 1D=1D-36528*(1Y-1)/100 LY=1SUB(1Y) 1F(LY:BU:1:OR:1D*LT*366) GD TO 5 1Y=1Y+1 1D=1D-355 LY=1SUB(1Y) B CO 10 1=1.12 D CONTINUE C PACK NUA YYMED 20			•	
ISUG(1Y)=FING(MCS(IY,A),I)+1 C SEPARATE YEAR/MONTH/DAY		SUBRUUTINE ADDYMO(IYMO,IDAY)	YCCA	29
C SEPARATE YEAR/VONTH/CAY IY = IYMUNICGCO IK = IY*1CCOO IM = (IYMC-IK)/IOO ID = IYMC-IK-IM*10O LY=ISUE(IY) C CCMPUTE ELAPSED DAYS FREV JANUARY C.O OF CENTURY ID=(IY-1)*36525/IOC+MONTH(IM.LY)*ID*IDAY C CCMPUTE NEW YEAR/MONTH/CAY IY=(ID-1)*100/36525*I IS=ID-3662E*(IY-1)/IOO LY=ISUE(IY) IF(LY.EG.1*OR*ID*LT*366) GO TO 5 IY=IY+1 ID=ID-36 LY=ISUE(IY) S CO 10 1=1*12 IF(IE*LE*MONTH(I*I*LY)) GO TO 20 PACK NEW YY*MED 20 IY*D=IY*ICDOC*I*IOO*ID*MONTH(I*LY) RETURN		COMMONAMONTH(13.2)	ADDY	30
IY = IYMEVICOCO IK = IY*1CCOO IM = (IYMC-IK)/IOO ID = IYME-IK-IM*100 LY=ISUE(IY) C CCMPUTE ELAPSED DAYS FRCV JANUARY C.O OF CENTURY IU=(IY-1)*35555/IOO+MONTH(IM.LY)*ID*IDAY C CCMPUTE NEW YEAR/MONTH/CAY IY=(ID-1)*100/36525*1 ID=ID-3662E*(IY-1)/IOO LY=ISUE(IY) IF(LY*EG*I*OR*ID*LT*366) GO TO 5 IY=IY*1 ID=ID-366 LY=ISUE(IY) REPRODUCIBILITY OF THE S CO 10 I=1*12 IF(IE*LE*MONTH(I*I*LY)) GO TO 20 C PACK NEA YYMMED 20 IYMD=IY*ICDO*I*IOO*ID-MONTH(I*LY) RETURN		ISUS(14)=MINO(MOS(14,4),1)+1	YGCA	31
IK = 11*10000 IM = (11MC-1K)/100 ID = 1YMC-1K-1M*100 LY=1SUE(1Y) C CCMPUTE ELAPSED DAYS FREV JANUARY C.O OF CENTURY IU=(1Y-1)*36525/100+MONTH(IM.LY)*ID*IDAY C CCMPUTE NEW YEAR/MONTH/CAY IY=(1D-1)*100/36525*1 ID=1D-36226*(IY-1)/100 LY=1SUE(IY) IF(LY.EG.1.0R.ID.LT.366) GO TO 5 IY=1Y+1 ID=1D-362 LY=1SUE(IY) S CO 10 1=1.12 IF(12.LE.MCONTH(I+1.LY)) GO TO 20 ORIGINAL PAGE IS POOR C PACK NEW YYMED 20 IYMD=1Y*1(JOC*I*100*ID-MONTH(I+LY)) RETURN	c	SEPARATE YEAR/MONTH/CAY	YOCA	32
IM = (1YMC-1K)/100 ID = 1YMC-1K-1M*100 LY=1SUB(1Y) C CCMPUTE ELAPSED DAYS FROM JANUARY C.O OF CENTURY ID=(1Y-1)*36525/100*MONTH(IM.LY)*ID*IDAY C CCMPUTE NEW YEAR/MONTH/CAY IY=(1D-1)*100/36525*1 ID=1D-3662E*(1Y-1)/100 LY=1SUB(1Y) IF(LY:B0:1:0R:ID*LT:366) GO TO 5 IY=IY+1 ID=1D-368 LY=1SUB(1Y) REPRODUCIBILITY OF THE 5 CO 10 I=1:12 ORIGINAL PAGE IS POOR 10 CONTINUE C PACK NEA YYMNED 20 IYMD=1Y*1CJDO*I*100*ID-MONTH(I*LY) RETURN		IY = IYMUVICCO	YOCA	23
ID = IYME-IX-IM*100 LY=ISUE(IY) C CCMPUTE ELAPSED DAYS FREV JANUARY C.O OF CENTURY ID=(IY-1)*36525/100*MONTH(IM.LY)*ID*IDAY C CCMPUTE NEW YEAR/MONTH/CAY IY=(ID-1)*100/36525*1 ID=ID-36525*(IY-1)/100 LY=ISUE(IY) IF(LY.EG.1.0R.ID.LT.366) GO TO 5 IY=IY+1 ID=ID-365 LY=ISUE(IY) S CO 10 I=1.12 IF(IS.EC.MCNTH(I+1.LY)) GO TO 20 TO CONTINUE C PACK NEW YYMED 20 IYMD=IY*ICJOC*I*100*ID-MONTH(I.LY) RETURN		IK = 1Y*10000	YCCA	34
LY=ISUE(IY) C CCMPUTE ELAPSED DAYS FREV JANUARY C.O OF CENTURY ID=(IY-1)*36525/100+MONTH(IM.LY)*10+IDAY C CCMPUTE NEW YEAR/MONTH/CAY IY=(ID-1)*100/36525+1 ID=ID-3662E*(IY-1)/100 LY=ISUE(IY) IF(LY*2G*1*0R*ID*LT*366) GO TO 5 IY=IY+1 ID=ID-366 LY=ISUE(IY) REPRODUCIBILITY OF THE S CO 10 I=1*12 IF(IE*LE*MONTH(I*1*LY)) GO TO 20 ORIGINAL PAGE IS POOR 10 CONTINUE C PACK NEW YY*MED 20 IY**D=IY**ICDO**I**100+ID-MONTH(I*LY)) RETURN		IM = (IYMC - IKI/IOO	YOCA	35
C CCMPUTE ELAPSED DAYS FRCV JANUARY C.O OF CENTURY		$10 = 1 \text{YMC} + 1 \text{K} + 1 \text{M} \neq 100$	YCCA	35
ID=(Y-1)*36525/100*MONTH(M.LY)*ID*IDAY C		LY=15Ud(IY)	AUDY	37
C CCMPUTE NEW YEAR/MONTH/CAY 1Y=(1D+1)+100/36525+1 13=1D+3662E*(1Y+1)/100 LY=1SUE(1Y) 1F(LY:EG:1:0R:1D:LT:366) GD TO 5 1Y=1Y+1 1D=1D+36E LY=1SUE(1Y) 5 CO 10 1=1:12 1F(10:LG:MCNTH(I+1:LY)) GC TO 20 10 CCNTINUE C PACK NEW YYMED 20	C	COMPUTE ELAPSED DAYS FROY JANUARY C.O OF CENTURY	YOOA	35
17=(10-1)+100/36525+1		IU=(IY-1)*36525/100+M9NTH(IM.LY)+10+1DAY	YCCA	39
13=10-36=2E*(1Y-1)/100 LY=1SUB(1Y) 1F(LY,EC,100R.ID.LT.3EE) GO TO 5 IY=1Y+1 ID=10-3=E LY=1SUB(1Y) 5 CO 10 1=1.12 IF(10.LC.MCNTH(I+1.LY)) GO TO 20 ORIGINAL PAGE IS POOR 10 CUNTINUE C PACK NEW YYMED 20 IYMD=1Y*1CD00+1*100+10-MUNTH(1.LY) RETURN	С	CEMPUTE NEW YEAR/MONTH/CAY	YGCA	40
LY=1SUE(1Y) 1F(LY,EC,100R,1D,LT,366) GO TO 5 1Y=1Y+1 1D=1D-2=6 LY=1SUE(1Y) 5 CO 10 1=1.12 1F(10,LC,MCNTH(1+1,LY)) GO TO 20 10 CUNTINUE C PACK NEW YYMED 20		1Y=(10-1)+100/36525+1	YGCA	4.1
1F(LY.EG.1.0R.ID.LT.3EE) GO TO 5 1Y=1Y+1 1D=1D-3=E LY=1SUE(1Y) 5 CO 10 1=1.12 1F(10.LE.MCNTH(I+1.LY)) GO TO 20 10 CONTINUE C PACK NEW YYMED 20		13=10-3662E*(1Y-1)/100	YCCA	42
IY=IY+1 ID=ID=D=E LY=ISUB(IY) B CO 10 I=1.12 IF(ID-EE.MCNTH(I+1.LY)) GO TO 20 ORIGINAL PAGE IS POOR 10 CONTINUE C PACK NEW YYMMED 20 IYMD=IY*ICDDC+I*100+ID-MONTH(I+LY) RETURN		LY=1\$08(1Y)	YGGA	8.3
REPRODUCIBILITY OF THE S CO 10 1=1.12 IF(12.4E.MCNTH(I+1.LY)) GO TO 20 ORIGINAL PAGE IS POOR 10 CONTINUE C PACK NEW YYMED 20 IYMD=1Y*1CDDC+1*100+1D-MONTH(1.LY) RETURN		1F(LY:Ed:1eDR:ID:LT:366) GO TO 5	4DDY	44
EV=1SGE(1Y) 5 CO 10 1=1.12 1F(10.4E.MCNTH(1+1.LY)) GO TO 20 10 CONTINUE C PACK NEW YYMED 20 IYMD=1Y*1CDD0+1*100+1D-MONTH(1.LY) RETURN		IY=IY+1	YGCA	45
5 CO 10 1=1.12		1D=1D-3=\$	YOUA	8.5
5 CO 10 1=1.12		LY=1SU=(iY) REPRODUCIBILITY OF THE	YOCA	47
10 CUNITRUE C PACK NEW YYMMED 20 IYMD=1Y*1CD0C+I*100+ID-MUNTH(I*LY) RETURN			YGGA	48
C PACK NEA YYMNED 20 IYMD=1Y*1CD00+1*100+1D-MONTH(1+EY) RETURN		IF(IC+EE+MCNTH(I+1+EY)) GO TO 20 UNIGHTIME THE 2D TO ST	YCCA	4 🙃
20 IY40=1Y*1CJ0C+I*100+ID-MUNTH(I+EY) RETURN		10 CONTINUE	ADDY	50
RETURN	¢	PACK NEA YYMNED	YOSA	51
		20 IY4D=1Y*1CDOC+1*100+1D-MUNTH(1+EY)	ADDA	5.2
			YGGA	53
CN3		RETURN	ADDY	54
		tno .	YCCA -	5.5

ADFLUX

Flux values are added to the tables in the location corresponding to the number of days between the date of the flux values and the day prior to the first date for flux data flux values. The stop date for flux data is reset to rein the table. The stop date available data in the table. flect the presence of the latest available data in the table.

For dates within the range of the table but for which data is not available a linear interpolation between the two non-zero points adjacent to the ends of the missing data span is used to compute values to fill in the table.

The logical function RFTMCD is used to determine when a Reference Time card is encountered signifying the beginning of a new arc.

The function JANTHG is used to calculate the Greenwich mean sideral time for Jan 0.0 of the reference year and to load flux data into COMMON FLXBLK.

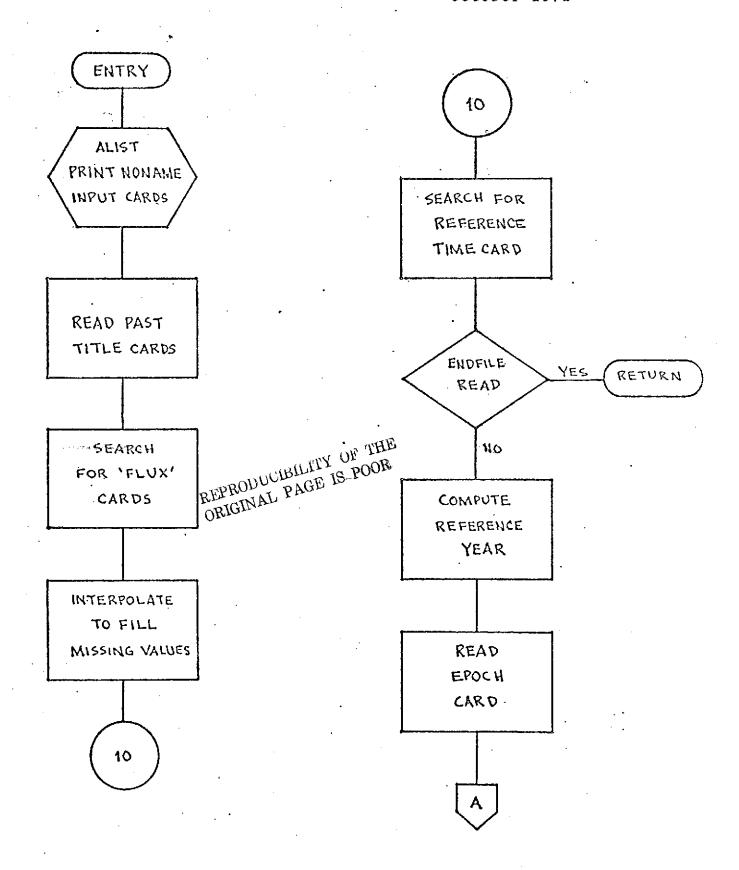
A flux file is written containing the information obtained from JANTHG for each arc.

NAME	ADFLUX
PURPOSE	1) TO ADD SULAR AND MAGNETIC FLUX TO STORED TABLES 2) TO COUNT THE NUMBER OF ARCS IN RUN 3) TO WRITE ON SCRATCH FILE THE GREENWICH HOUR ANGLE OF JAN C.O OF THE REFERENCE YEAR AND THE FLUX BATA NEEDED FOR EACH ARC
CALLING SEQUENCE	CALL ADFLUX (NARCS . MSFEUX . NFLUX . SFLUX . MYMD .L YM D)
STABOL TYPE	DESCRIPTION
NARCS I	OUTFUT - NUMBER OF ARCS IN RUN
MGFLUX I	INPUT & OUTPUT - MAGNETIC FLUX CATA
SFLUX R	INPUT & CUTPUT - SOLAR FLUX CATA
MYMD I	INFUT - START DATE FOR FLUX DATA
LYMD I	INPLT & DUTPUT - STCP DATE FOR FLUX DATA
SUBROUTINE USED	ALIST ANDS DIFF THEOR JANTHG RETMOD
COMMON BEOCKS	FEXBUK THTELK TEBUK
CONSTANTS USED	MASK
SYMBOL TYPE	DE.SCRIPTICN .
₩ A \$K I + 2	HEX NUMBER USED TO EXTRACT DECIMAL NUMBERS FROM THEIR ESCOIC CODE
INPUT FILES	INPT - INFUT CARDS
OUTPUT FILES	FLTP - FLUX DATA FILE
RESTRICTIONS	MUST BE CALLED BEFCHE FIRST READ

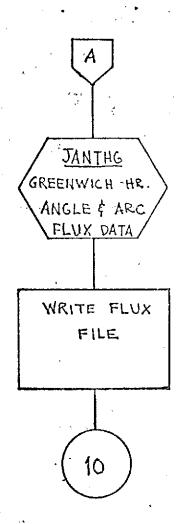
	•	
SUBROUTING AUTIOX(NARCS: MGTLUX: NFLUX: STLUX: MYMD: EYMD)	ACFL	45
DOUBLE PRECISION OTI (DATE, DATAN, FLUXS (VALUE), VALUEZ, JANTHG, THET	GO ለስጣር	46
DOUBLE PRECISION FLUX1.FLUX2.FLUX3.FLUX4.FLUX5	APEL	47
LOGICAL LASTAFF TMCC .	ADFL	48
INTEGER FLIF (ANDS	አስክር ተ	45
IN TEGER +2 A (AD) +SELUX (NELUX) +MGELUX (NELUX)	ACFL	50
CCMMON/FE/BEE/FEUX1(405),FEUX2(405),FEUX3(405),FEUX4(405).	ADFL	e 1
• FLUX5(406)	ADEL	52
COMMODIZENJULK ZJHDCT1 (54) ATHOTGC AMBOCY (76)	AD-L	6.3
COMMONZIPLELKZINTP.1088(S).ELTE.GESTP	ACEL.	56
REPRODUCIBILITY OF THE	الم الم	55
OPICINAL PAGE IS POOR		

```
DATA FLUXSICATAN/GHFLUX - +6HDATA
                                                                                    ACTL
                                                                                           27
C'PRINT INPUT CARDS
                                                                                    ALFL
                                                                                           £ 5
       CALL ALIST
                                                                                    ACFL
C MEAU PAST TITLE CAPDS
                                                                                    ^ CFL
                                                                                           5 Ç
       READCINIP (1 CCCC)
                                                                                    ATFL
                                                                                           er
       JDATE ALIYAD
                                                                                    ACFL
                                                                                           €:
C SCAFCH FOR "FLUX" CARDS
                                                                                    APPL
                                                                                           62
       READ(INTP-SCCOOLDT1-DATE-VALUE1-VALUE2
                                                                                    ACFL
                                                                                           €3
       IF (UTILEGIDATAN) GO TO 2
                                                                                    BFFL
                                                                                           64
       IF (DITLENE OF LUXS) GO TO 1
                                                                                    A DEL
                                                                                           £ 5
       IDATE = EATE + . 1 DC
                                                                                    ACFL
                                                                                           66
       CALL DIFF (MYME . 0 . IDATE . 1 . IDAY . ISEC)
                                                                                    ACFL
                                                                                           67
       IF (ICAY & GT. C. AND . IDAY . LT. NELUX) GO TO 3
                                                                                    AFFL
                                                                                           €÷
       PRINT 40000 DATE
                                                                                    ACFL
                                                                                           69
       CALL GEROF(10 (CT1)
                                                                                    ADFL 176
       GO TO 1
                                                                                    APFL
                                                                                           71
CLUBAT OF XUUS CUA O
                                                                                    ALEL
                                                                                           72
     3 IF (VALUED + G 7+ C+ CDC) SPEUX (10 AY+1) = VALUE1 #1 +00+1+0 +100
                                                                                    AUFL
                                                                                           73
       IF (VALUE2.GT. 0.000) MGFLUX(10AY+1)=VALUE2*1.0D+1+0.100
                                                                                    FOFL
                                                                                           74
       IF (16ATE + GT + LYMC) LYMD = 10ATE
                                                                                    ACFL
                                                                                           75
       GO TO 1
                                                                                    ACIFL
                                                                                           76.
       IF (UDATE . COLLYND) GO TO 10-
                                                                                    A.C.F.L
                                                                                           77
     · CALL DIFF (MYMC +O+LYMD+1+JDAY+JSEC)
                                                                                    ALFL
                                                                                           7 £
C INTERPOLATE TO FILE MISSING FLUX VALUES UP TO THE MOST RECENT TAGES
                                                                                    ALFL
                                                                                           7¢
C VALUE
                                                                                    Y L L F
                                                                                           80
       DO 9 LL=1.2
                                                                                    ACFL
                                                                                           €1
  SO SEASTER ALSO.
                                                                                    ACFL
                                                                                           83
      AM TO.
                                                                                    ACFL
                                                                                           ŧz
       CALL DIFF (MAND TO FUDATE TI TIDAY FISEC)
                                                                                    ACCL
       IF (LL.20.1) BD=SFLUX(IDAY+1)
                                                                                    ACFL
                                                                                           €5
       IF (LL +0 G + 2) BB=MSF LUX(IDAY+1)
                                                                                    4 (FL
       KDAY=ICAY
                                                                                   ልር E ኒ
                                                                                           87
       IDAY#KEAY 1
                                                                                    ACFL
                                                                                           ê £
      KDAY=KI AY+1
                                                                                    APFL
                                                                                           FC
       IF (KDAY+GT+ JDAY+1) GC TC 6
                                                                                    ACEL
                                                                                           5.5
       IF (LL. E.C. 1. AND. SELUX (KOAY) . LE.C.) GO TO 5
                                                                                    ATTL.
                                                                                           5:
       IF (LL +2 0 . 2 . ANC . MGFLUX (KCAY) . LE . C) GO TO 5
                                                                                    ACFL
                                                                                            92
       IF (KDAY.TO. JUAY+1) LAST=. TRUE.
                                                                                    ADEL
                                                                                            93
       X=IDAY
                                                                                    ACFL
                                                                                            5-
       IF(LL.CG.1) Y=SFLUX(IDAY)
                                                                                    ATFL
                                                                                            C =
       IF (LL. HC. 2) Y= MGF LUX(IDAY)
                                                                                    1. C.F.L.
                                                                                            Ç٨
       X1 =KDAY
                                                                                    ACFL
                                                                                            57
       IF (LL .E C. 1) Y1 = SF LUX (KDAY)
                                                                                     ACFL
                                                                                            5 @
       IF (LL.SG. 2) YI = MGF LUX (KCAY)
                                                                                    A C F L
                                                                                            çε
       AM=[ Y1- Y) /( X1-X)
                                                                                     AFFL 100
       65=Y1-/. N + X1
                                                                                    ACFL 101
       GD TO 7
                                                                                    ADEL 102
       KDAY#KDAY~1
                                                                                    ADEL 103
       LA ST# TRUC.
                                                                                    FOFL 164
       ID =11 AY+1
                                                                                    ACEL 105
       CO & I=IU .K( + Y
                                                                                    FOFL TOE
       X = 1
                                                                                    ADPL_107
       IF (LL a) 0.2) MOTILUX(1)=/ VeX +084 .5
                                                                                    ADFL 108
       18 (LL. "C+1) SMLUX(11 #AM#X+88++8
                                                                                    ACFL 109
       CONTINUE
                                                                                    ADEL 110
       IF (.NOT.LAST) GC TO 4
                                                                                     AFFE 111
```

9 CONTINUE	ADFL 112
S SCARCH FOR REFERENCE TIME CARD	ACFL 113
10 F0.AU(INTP.2000C (END=20) A	405F 114
IF (INJTIRETECT (A)) GO TO 10	ADFE 115
C COMPUTE REFERENCY YEAR	APFL 115
IY=10*(ANDS(A(1),MASK)/256)+ANE2(A(0),M4SK)/256	ADFL 117
C READ EPOCH CARD	ADFL 115
READ(INTP,30000) IYMD41YMDD	ADFL 119
IF (IYMOO.GT.O) IYMO=IYMCD .	ADEL 150
NARCS=MARCS+1	ADEC 181
CHA RANIDAR NI RADY BONYATERA BO PEDANA PUDIH HOLYMPERD DMIMPETECES	APPL 188
C SLUTCT FLUX VALUES FOR ARC	ADFL 123
THETGO= JAINTHO (I YME .1 Y .SFLUX .MGFLUX .MY MO.LYMD)	ADFL 124
C WRITE FLUX FILT	ADEL 125
<pre>WEITL(FEIT) THUTSC+FEUX1</pre>	APEL 185
WEITC(FLTP) FLUX2	ADFL 127
WEITT (FLTP) FLUX3	40FL 128
MR ITZ(PLTP) FLUX4	ADEL 129
MF ITL(FLTP) FLUXS	ADEL 170
GD TO 10	AFFL 131
20 INDETED FUTE	▲DFL 132
TO REVIND FLTP	40FL 133
PC KIND INTP	ALFL 134
RE TURN	ADFL 135
10000 FORMAT(1X//)	ACFL 136
20000 FORMAT(ECAL)	ADFL 137
30(CC FORMAT(16.34X.16)	ADEL 138
AGELUS FORMATETHI + 20 X + 10 ATE 1 + 114 + 7 + 1 ON FLUX CARD OUT OF RANGE OF 1 +	
. TABLES, WING 15X . CARD IGNORED. EXECUTION CONTINUING. 1/)	ACFL 140
50000 FDRMAT(A6.4 X.3L15.8)	ACFL 141
END .	4DFL 142



ADFLUX Page 6 of 6 October 1972



```
PURPOSE TO LIST GEODYN INPUT CARDS

CALLING SEQUENCE CALL ALIST

SUBHOUTINES USED NONE

CCMMON BLOCKS TPEBLK

INPUT FILES INTP + INPUT CARES

CUIPUT FILES IGUTP - PRINTER
```

	•			
	SUBROUTINE ALIST		ALIS	1.5
	LOGICAL*A LRECHO(20) . 61	NO.	AL1S	19
		NA CHAHANJIA DHE TEVANDELE V. PUBBLE C. NEUBBEH	ALIS	30
•	EQUIVALENCE (ICASE, LRECH		AL 15	21
	COMMUNITHERLK / INTP. ICUT		ALIS	22
		ND/oFAL SEO/, IDATA/AHDATA/	ALIS	. 23
CLIST	GENEYN INPUT CARDS		AL15	24
	WHITE (LULTP + 1 COO)		ALIS	25
•	WRITE(IDUTP.2000)		ALIS	2ნ
	WRITE(1061P.3000)	•	AL IS	27
1	WRITE(IDUIP,101) IPAGE	•	ALIS	28
_	IPAGE= IPACE+1		ALIS	29
	I = 0		AL IS	30
	IF(END) 60 TO 80		ALIS.	31
ذ	L (RESCHS, COL, STAL) CASA	RECPO	· ALIS	32
. 7	I=I+1		ALIS	33
	WRITE (IGUTP . 102) LRECRE	.LINE	ALIS	্3৫
	LINE =LINE +1		ALIS	35
	16(1.50.56) GC TO 1		ALIS	3.5
	IF(ICASE.EQ.ILATA) END=	• TRUE •	ALIS	37
	IF(.NOT.END) GO TO A		AL I S	35
20	READ(INTE-100 FNO=55) L	FFCRD	ALIS	35
	IFCICASE.EG.SELECT.CR. I	CASE.EQ.DELETE.UR.ICASE.EQ.ENDALL) GO TO	7 ALIS	ΛÇ
	ENU=+FALSE+	\cdot	ALIS	41
	IF(I.LL.SC) GC TO 40		ALIS	42
	BRITE(IDUTE: 101) IPAGE		ALIS	43
	1PAGL=IPACE+1		ALIS	4.4
	1=0		ALIS	45
	GU TG 7	REPRODUCIBILITY OF THE	ALIS.	4.6
. 40	WRITE(IUCTP:103)	ORIGINAL PAGE IS POOR	ALIS	47
	1=1+4:	Ollidimin and a contract of	ALIS	4 0
	GC TU 7		ALIS	۸ç
5.5	REXINO INTP		ALIS	50
	FaTURM		ALIS	Ş. 1
	FORMAT (2044)		AL15	52
101	FURBART (*1LISTING OF MUL	TIMARC GEODYN SETHUP1.BEX.CHPAGE.IBZZZZ	ALIS	53
102	(Alaketi) Tanaba		AL 1/5	5.5
193	FURMAT (7/7)		AL 15	35

```
1000 FURMAT(1H2,20X,5(1H*)/20X,7(1H*)/19X,9(1H*)/13X,4H****,2X,4H****/ ALIS
                                                                                  56
           13X,3H***,3X,4H****/17X,AF****,3X,AH****/17X,4H****,3X,4H****AL[S
                                                                                  57
                                                                                  58
          `//17X,4H4***,3X,4H****,6X,2H***/17X,4H#***,3X,4H****,4X,
                                                                                  5¢
                                                                            ALIS
           5(1H*),53X,5(1H*)/17X,4H****,2X,4H****,3X,6(1H*),54X,5(1H*)/
           13X, 9H****,1X, 6H****,1X,8(1H*),53X,6(1H*)/19X,12(1H*),1X,
                                                                            ALIS
                                                                                  00
          4H****,53%,4H****/20%,9(1H*),3%,4H****,52%,4H****/21%,5(1H*),
                                                                            ALIS
           6X.41****.52X.4H****/20X.4H****.8X.4H****.51X.4H****/19X.
                                                                            AL IS
           5(1H+),8X,4H****,51X,4H****/15X,5(1H*),9X,6H****,50X,4H****/
                                                                            ALIS
           17X.E(1H#).10X.4H****.50X.4H****/16X.5(1H*).11X.4H****.47X.
                                                                            AL IS
                                                                                  64
                                                                                  55
           wh****/15X,5(1H*),12X,4H***,49X,4H****/14X,5(1H*),13X,
                                                                            AL IS
           4H****.^EX.4H***×/13X.5(1H*).14X.4H****.6X.8(1H*).8X.7(1H*).
                                                                            ALIS
                                                                                  56
           114.7(1H*),1X.4H****.4X.7(1H*),7X.5(1H*).4X.6(1H*).2X.
                                                                                  57
                                                                            ALIS
          7(11:41)
                                                                                  68
                                                                            ALIS
2000 FORMAT(12x.5(1H*),15X.6H****,5X.10(1H*).5X.10(1H*).8X.13(1H*).
                                                                                  49
                                                                            AL1S
                                                                                  70
           5X.7(14*).7X.5(1H*).4X.6(1H*).1X.9(1H*).11X.5(1H*).16X.
                                                                            AL1S
           4H+***.4X.11(1H*).4X.12(1H*).5X.13(1H*).5X.7(1H*).7X.4H****.
                                                                            ALIS
                                                                                  71
           5X, 17(1H+)/2X, 5(1H=), 2X, 5(1H+), 17X, 4H<**<, 3X, 4H+**=, 6X, 2H**,
                                                                                  72
                                                                            AL IS
                                                                                  73
           QX+4F7***+55X+3H***-6X+6H***++5X+4H****+9X+4H****-6X+4H****
                                                                            ALIS
           LX. C(1Hx), 5X, 4 Fxxxxx/ 3X, 5(1Hx), 1X, 5(1Hx), 17X, 4 Hxxxx, 4X,
                                                                            ALIS
                                                                                  7 1
           75
                                                                            AL 15
           CX.4Fx~**;3X.5(1H*).6X.4H****/4X.9(1Hx).17X.4H****.6X.
                                                                            ALIS
                                                                                  76
           5(11+),6X,3H***,7X,3H***,5X,3H***,7X,6H****,6X,4H****,5X,
                                                                            At IS
                                                                                  77
           4F=####17X,4H***#,7X,6H** = #/5X,7(1H*),17X,4H**=,8X,6(1H*),
                                                                            ALIS
                                                                                  78
           68:4F****,7X,3H**,4X,6H***,7X,4H***,7X,4H***,7X,4H***
                                                                            AL 15
           &A, &F=====7X, 4H====16X, 5(1H=),17X,4H====,7X,4H====,10X,3H===,16IS
                                                                                  60
          · 达X 。 3 日本利益 。 在 X 。 3 日本科本 。 7 X 。
                                                                            AL IS
                                                                                  31
          $H$$$$$7X$&H$$$$7X$$Hb$$$$$$AH$$$$$7X$4H$$$$7X$4H$$$$/6X$6{1H$};
                                                                            AL IS
                                                                                  82
           $2X,4H*****,7X,4H****,10X,4H****,7X,4H****,3X,4H****,6X,
                                                                            AL 15
                                                                                  33
           5(1H+),7x,4H****,6x,5(1H+),8x,4H****,7x,4H***/6x,3(1H*),
                                                                            ALIS
                                                                                  94
           13X;4H*****6X;4H****;10X;4H****;6X;4H****;4X;4H****45X;
                                                                            ALIS
                                                                                  85
           6{1F#},6X,9H****,6X,5(]H*},3X,4H****,7X,9H****)
                                                                            AL 15
                                                                                  86
3003 FURMAT (4x,4H****,2x,15(1H*),2x,4H***,0x,4H****,3x,4H****,5x,
                                                                            ALIS
                                                                                  67
           4Hxxxxxx5Xx5Hxxxxxx4Xx7(1Hx)x4Xx4Hxxxxxx5Xx5(1Hx)x5Xx4Hxxxx
                                                                                  વવ
                                                                            ALIS
           72.4F****/3X.5(1H*).6X.15(1H*).6X.11(1H*).6X.12(1H*).6X.
                                                                           AL IS
                                                                                  € 5
           1 1 ( 16 * ) + 1 X + 40 * * * * + +6 X +9 ( 1 H * ) + 1 X + 3 H * + * + 4 X + 4 H * * * * +7 X +6 ( 1 H * ) /
                                                                            ALIS
                                                                                  90
           2X.c(1H*).5X.12(1H*).12X.5(1H*).4X.10(1H*).3X,5(1H*).2X.
                                                                            ALIS
                                                                                  71
           4P####,7X,7(1P#),2X,3H###,7X,5(1B#),5X,7(1B#)/101X,4H####/
                                                                                  92
                                                                            ALIS
           101X。1H+**t/100X。4H+***/100X。5H****/99X/AH***/79X/AH***/
                                                                            ALIS
                                                                                  93
        96X,4F****/3X,25(1H%),43(1H*),30(1H*)/2X,99(1H*)/1X,99(1H*))
                                                                            ALI5
                                                                                  94
    LIND
                                                                            ALIS
                                                                                  95
```

MAKE	ALPMRC	,
PURPOSE	BLOCK DATA STORAGE OF ALPHA-NUMERIC USED IN GEODYN PRINT FORMATS	INFORMATION
CCHMON BLOCKS	ALPMRC	

BLOCK DATA	ALDM	11
IMPLICIT REAL+8 (A-Z)	ALPH	12
LOGICAL HYPER	ALPM	13
COMMONIAL PARCITHMS (5) .TIMING, ELANK.ATYPE (31).UNITS (15).ELCUT.	ALPX	1 4
HYPER	ALPM	15
DATA BLANK/8H /	ALPM	16
DATA TIMING/SHTIMING/	AC DM	17
CATA UNITS/SHSE COND. 6HEAD IAN. 6 HMETERS. 5HM/SEC. 6HMETERS. 1H .	4LPM	1.0
3*chRACIAN,2*1H .5HM/SEC.1H .2*SHRADIAN/	AL PM	19
DATA ATTEREMENT ASC. SHEANCE . SHE PATE. SHEELGHT, SHALPHA . SHX ANGL.	ALPM	20
6HAZMUTH, SHOECLIN, 2=1H , 6HH RATE, 6HUETA , 6HY ANGL, 6HELEV ,	46.54	21
3H X.SH Y.3H Z.SH XDOT.5H YDOT.5H ZDOT.	ALDY	22
3H A.SH E.SH INCL. EH NODE ISH PERGISH MEAN.	ALDH	23
6HT BLAY. 6HERS RT. 6HAV2 FR. 6HAV3 FR. 4H ALL/	ALPY	20
DATA TIMESSHETEST WEH LAST VOFITERATION AH AND	ALPH	25
END	ALDW	3.4

PURPOSE	TWO BYTE INTEGER 'AND' FUNCTION 8		
CALL ING SEQUENCE	I=AND 2(11.12)		
SYMBOL TYPE	DESCRIPTION .		
11 1 = 2	INPUT - FIRST INTEGER		
12 1 * 2	INPUT - SECOND INTEGER		
AND2 1	DUTPUT - AND OF II 5 12		
SUERCUTINES USED	פאמא		
COMMON BLOCKS	PAGN		
INPUT FILES	PNON		
OUTPUT FILES	элси		
INTEGER FUNC EQUIVALENCE	TION AND?(I1:I2) (IAND.RAND)	SDAA SDAA	26 27 28
INTEREST II	.12	SCNA SONA	20
E FIND LUGICAL AND	CE THE ARGUMENTS	ANDS	30
J1=I1	:	SCHA	31
J∠=1 è		AND2	32
RAND=ARD (UI)	J21	AND2	33
CH-41= SCHA	•	, AND2	34
RETURN		AND2	3.5

SONA

NAME	APPER	*
PURPOSE	TO COMPUTE SATELLITE APOGEE HEIGHT AND HEIGHT	PERIGEE .
CALLING SEQUENCE	CALL APPER	
SUBROUTINES USED	идищ	
CCMMON BLOCKS	APARAM CELEM CORBI INTOLK	CONSTS
INPUT FILES	PNCN	
CUTPUT FILES	NONE	
REFERENCES	*GEODYN SYSTEMS DESCRIPTION* VOLUME 1 - GEODYN DOCUMENTATION	

SUBROUTINE APPER		
IMPLICIT REAL *9 (A+H,C+Z)	APPE	22
CUMMON/AFARAM/INPAR(A) .NSAT.NGFARC(5)	Y66E	23
COMMONICELEMINELEMINE (5.2). CRASE A(6.2), XMU.EC. IRMSTO	APPE	24
	APPE	25
COMMONALATE KATHODI (4) . AF . AFSO . FLAT. FS032. FFS032. GM3(57)	APPE	26
COMMUNICASTS/CPI,DTXOPI, ERAD, ERSEC	<u> </u>	27
DO 10 1=1.556T	APPE	28
SPSISOHUSIN(CREELA(3.1)*DRAD)*CSIN(ORBELA(5.1)*DRAD)	APPT	29
G. O. D. C. (20 A.)	APPE	30.
C CALCULATE THE EARTH RADIUS TO THE CIRCLE OF INTERSECTION OF THE	APPE	31
C SATELLITE SEMI-MAUDR AXIS WITH THE SPHERUID	APPE	32
EARTh=Ait+5032*SPS150**2-FFS032*SP3150	YDDE	33
ABSAT=URBELA((1,1)+0RSF(A(2,1)	APPE	31
C CALCULATE THE APECES AND PERIORS DISTANCES	APPE	35
C SUBTRACT OUT THE EARTH RADIUS TO CALCULATE APOSES AND PERIGEE,	APPE	35
C HEIGHTS CONTROL APPLIES AND PERIGES,	APPE	37
PERT(1)=(CREELA(1.1)-AESAT-EARTH)=1.0D-3	· APPE	39
10 APHT (1) = (CRSEEA (1.1) + 4ESAT-EARTH) = 1.00-3	ZPPE	35
RETURN COMMENTAL SUPERING	YOPE	AO
CNA	APPE	41
	APPE	42

· · · · · · · · · · · · · · · · · · ·	
NAME	ARCPAR
PURPOSE	TO LOAD INDIVIDUAL ARC PARAMETERS INTO VARIABLE STORAGE ARRAYS
CALLING SEQUENCE	CALL ARCPAR (BSTRT, BSEND, BIASO, BBIAS, BIASSG, BTYPE, BSTANO, BIASNO, GPVALO, GPSIG, GPNO,
•	GPVAL:INDXCS)
SYMBOL TYPE	DESCRIPTION
BSTRT DP (1)	DUTPUT + BIAS START TIMES IN DAYS FROM REFERENCE JAN 0.0
. BSEND UP (1)	OUTPUT - BLAS STOP TIMES IN DAYS FROM REFERENCE JAN 0.0
61A50 DP	CUTPUT - A PRIORI BIAS ESTIMATES
SEIAS DF	OUTPUT - CURPENT BEST BIAS VALUES.
B1A33G OF	UUTPUT - STANDARD DEVIATION OF BIASES AND DRAG AND SOLAR RADIATION COEFFICIENTS
01YPE I+2	DUTPUT - ELAS TYPES
astanu (*2 - (1)	NUTPUT - ELAS STATICY NUMBERS
BIASNO DF	OUTPUT - BIAS INDICES REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR
GRVALO DP	OUTPUT - A PRIORI VALUES OF ESTIMATED GEOPOTENTIAL COEFFICIENTS
GPS1G DP .(1)	OUTPUT - A PETORI SIGMAS OF ADJUSTED GEOPOTENTIAL COEFFICIENTS
(1) GPNO 142	DUTPUT - LOCATIONS OF GEOPOTENTIAL PARAMETERS IN NORMAL MATRIX
GPVAL DP	OUTPUT - CURPENT BEST VALUES OF ADJUSTED GEOPOTENTIAL CHEFFICIENTS
1NDXCs 1+2 (3+1)	CORRECTIONS CORRECTIONS
. SUBROUTINES USED	STORE CLEAR 2 DATARD NUMBER 2
CONMON BLOCKS	APARAM COMOUT CONSTS CPARAM
	FMODEL FLXBLK INTOLK PRIDRI
	TREBUK VRBLIK

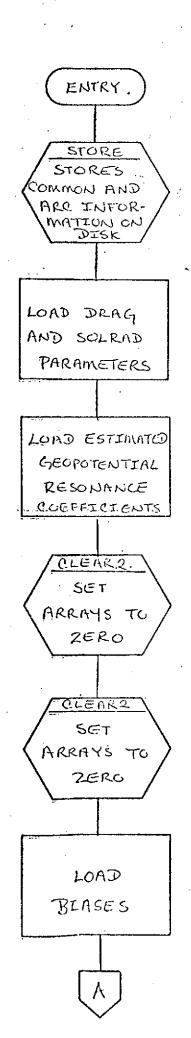
INFUT FILES NONE

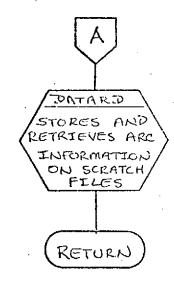
DUTPUT FILES NONE

REFERENCES 'GEODYN SYSTEMS DESCRIPTION'
VOLUME 1 - GEODYN DOCUMENTATION

```
SUBROUTINE ARCPAR(RSTRT, BSEND, PIASO, BBIAS, BIASSG, BTYPE, BSTAND,
                                                                               ARCP
        BIASNE, GPVALO, GPSIG, GPNO, GPVAL, INDXCS, BESTNO, BETYPE, NEBIAS,
                                                                               ARCP
                                                                                     59
                                                                               ARCP
        ISTANC)
                                                                                     70
                                                                               ARCP
     IMPLICIT REAL#8 (A-F.D-Z)
                                                                                      71
                                                                               ARCP
     EGGICAL CHOGOS.STAFTR.STAFTW
                                                                                      72
                                                                               ARCP
     INTEGER*2 STYPE.3STANG. BIASNG. ESTYPE.BSTNGS.GPNG.INDXCS
                                                                                      73
                                                                               ARCP
    CHATEL FERY BESTNO, BETYPE, ISTAND
     INTEGER POOR, SRAD, A SAT, SCRO, FETP, ARONO, SCRA, ADDRD, STARTA, STARTO,
                                                                               ARCP
                                                                                      74
                                                                                      75
                                                                               ARCP
        DUTSTR
                                                                                      76
                                                                               APCP
     REAL BIASIBLASVR
                                                                                      77
     DIMENSION DETRI(1), BSEND(1), BIASO(1), BELAS(1), BIASSG(1),
                                                                               ARCP
        ETYFE(1), ESTAND(1), ETASND(1), GPVALO(1), GPSTG(1), GPND(1),
                                                                                      78
                                                                               ARCP
         GPVAL (1) . INDXCS(3.1), SUN1(1). SUN2(1) . BESTNO(NEELAS).
                                                                               ARCP
                                                                                      79
                                                                               ARCP
                                                                                      80
         BETYPE (NEE LAS) . ISTANG( 1)
     CCMHUNZAFARAMZINDAR, INDAR I, NGTAS, NSTSTA, NSAT, I, GPARC, NORECI, NDARAM, ADCD
                                                                                      31
                                                                                      92
      COMMON/CENDUT/IG1(11).NARCS.NSTARD.STARTR.STARTW.STARTA.STARTD.
                                                                                      03
                                                                               AP CP
                                                                                      36
                                                                               ARCP
         INSTRI-DUTSTR
                                                                               ARCP
                                                                                      55
      CUMMON/CONSTC/EPI,OT#OPI,ERAD, EMSEC
      CUMMUNICPARAMINSTA: NM4ST: NSTEST: NOT4: MUTAS: NGPC1: NGPC2: NGPCCM:
                                                                                      85
                                                                               ARCP
                                                                                      97
         NOSEST, CMP GPR (LIMI, LIMZ, NOEM, NOEMST, NTIDST, NTIDEM, INNRSW,
                                                                                ARCE
                                                                                      38
                                                                               ARCO
         NOUNST INDICENS
                                                                                ARCP
                                                                                      P ()
      COMMUNICACIONEL/INCEXE(4).CS(30.23),MODEL(15)
                                                                               APCP
                                                                                      20
      COMMUNIFEIXEUKIUTIME1(900).BTIME2(900).dSTYPE(900)
                                                                                ARCP
                                                                                      0.1
      CO 4MUNITATELKITHOCT1(59), ADDR(2,3), LOVE(8)
      COMMORPRIORIZELEMIN(7P). DRAGSC(2,3).DRAGO(2,3).CD(2,3)
                                                                                      92
                                                                                ARCP
                                                                                ARCP
                                                                                      0.3
C ORTHIN STURED ARC INFORMATION
                                                                                      ٩A
                                                                                ARCP
      COMMUNITEELK/INTP(8).SCRA.SCRC.FLTP(2)
                                                                                      95
      COMMUNIVERENCE LAS (900) . BIASVR (500) . BSTNOS (900)
                                                                                ARCP
                                                                                       26
                                                                                ARCD
      EQUIVALENCE (PHASE, LOVE(S))
                                                                                       37
                                                                                ARCP
      DO 300 AACNO=1.NAHCS
                                                                                ARCP
                                                                                       98
      IF(NEGIAS+LE+0) GO TO 10
                                                                                ARCP
                                                                                       23
      READ (SCHO) DESTNO
C STURE DRAG AND SHEAR PADIATION CDEFFICIENTS
                                                                                ARCP 100
                                                                                ASICP 101
      ADAD (SCAC) HETYPE
                                                                                ARCP 102
      GU TO 20
                                         REPRODUCIBILITY OF THE
                                                                                ARCP 103
   10 KEAD (SCAC)
                                                                                ARCP 104
                                         ORIGINAL PAGE IS POOR
      READ (SCAC)
                                                                                APCP 105
   20 CALL STUNE( . TRUE . . . FALSE . )
                                                                                ARCP 106
       IF (NOTASEALERO) GO TO EC
                                                                                ARCP 107
       LO 40 I=1,NFIASE
                                                                                ARCP 105
       JabuSTNU(1)
                                                                                 ARCP 139
   AU DESTAUGE PENUMER 2 (U. ISTANO (NSTA)
                                                                                 ARCH 110
   BO PHARSE HARREST FOR AD
                                                                                 ARCP 111
C STURE ESTIMATED SEPROTENTIAL RESONANCE CUEFFICIENTS
```

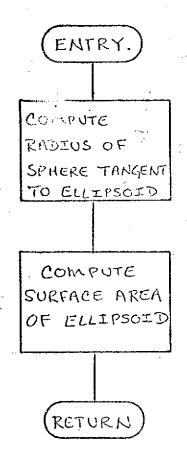
•		
	ARCP 112	
DO 100 I=1.MEIAS	ARCP 113	
100 BIASNU(1)=0		
I 1 = 0	ARCP 114	
£1=0 *NSAT	ARCP 115	
00 150 L=1.NSAT	ARCP 116	
DO 150 I=1.3	ARCP 117	
11=11+1	ARCR 118	
#1#S0(11)=CD(L:1)	ARCP 119	
681A5(T1)=CD(L,I)	ARCP 130	
BIASSG(11)=DRAGSG(L.I)	ARCP 121	
INDEX=ADCR(L.I)	ARCP 122	
150 IF(INDEX.(T.O) BIASNO(II) =L1+INDEX	ARCP 123	
NGPARC=30C-NGPARC	ARCP 124	
IF(NGPARC.LT.1) GO TO 200	ARCP 125	
NGHCLR=NCSEST-NGPCOM	ARCP 126	
CALL CLEARS(GENOINGPELRI)	ARCP 127	
CALL CLEAR2(INDXCS, NGPCGR, 3)	ARCP 128	
LJ 175 I=1.NGPARC	ARCP 120	
11=901-1	ARCP 130	
INDXC3(1,1)=uSTYPE(11)	ARCP 131	
(11) SUN 15 F = WA	ARCP 132	
· -	APCP 133	
C STORE BLASES	ARCP 134	
N=NM/1 00	ARCP 135	
W=NM-N *1 C C	ARCH 136	
INDXC5(2:1)=N	ARCP 137	
1NOXCS(3.1)=M	ARCP 138	
GPVALO(I)=BIAS(II)	ADCD 130	
υμβίο(1)-τΙΑΣΥΚ(11) 	ARCP 140	
INPART=INFART+1	ARCP 141	
. GPNO(1)=INPARI	ARCP 142	
<pre>#=#+1 IF(INDXCS(1+1)+EQ+1) GC TO 175</pre>	ARCP 143	
	ARCP 144	
N=31-N	ARCP 145	
## 34 M	ARCP 106	
C WRITE OUT ARC DATA 176 GPVAL(1)=CS(N:M)/3[ASVR(11)	ARCP TAT	
200 IF((M) (AS + LT + 1) GO TO 300	ARCP 148	
	ARCP 149	
L1=3*N5AT	ARCP 150	
LO 250 I=1,NB1AS	ARCP 151	
11=[+L] BSTRT(11=ETIME1(1)	ARCP 152	
	ARCP 153	
ESENU(1) = ETIME2(1)	ARCP 15A	
BIA50(II)=BIAS(I)	ARCP 155	
GBIAS(II)=RIAS(I)	ARCP 156	•
ETYPE(1) = ESTYPE(1)	ARCP 157	
EIASSG(11)=EIASV7(1) ESTANU(1)=ESTANUS(1)	ARCP 156	
er e	ARCP 159	
250 ELASNU(II)=INFARI+1 300 CALL DATARD(A4CNOTRUETRUEFALSE.)	ARCP 150	
	ARCP 151	
RUATNU SCHO	ARCP 152	
END FILE SCRA	4RCP 143	
HENING SCHA	ARCP 164	
Full div		
REPRODUCIBILITY OF	D Drrs	
ORIGINAL PAGE IS P	COOP :	-
1 AGE 19 P	OOK	





NAME	AREAS
PURPUSE	TO COMPUTE THE ELLIPSCIDAL SURFACE AREA LYING BETWEEN TWO FIXED LATITUDES AND TWO FIXED LONGITUDES
CALLING SEQUENCE	X=AREAS(Z1+Z2+TLCN)
SYMBOL TYPE	DESCRIPTION
Z1 0F	INPUT - Z-COORDINATE ASSOCIATED WITH LATITUDE 1
ZZZ DF	INPUT - Z-COORDINATE ASSUCTATED WITH LATITUDE 2
TEUN OF	INPUT - THE DIFFERENCE (IN DEGREES) BETWEEN THE TWO LONGITUDES
SUBREUTINES USED	NONE
COMMON BLUCKS	CONSTS INTBLK
INPUT FILES	NONE
OUTPUT FILES	NDNE

	_	
- DUUBLE PRECISION FUNCTION AREAS(21,22,TLCN)	AREA	29
IMPLICIT FFAL*?(A-H.O-2)	AREA	30
LUGICAL NCTIST	AREA	31
COMMON/CCASTS/UPI, OTWOPI, DEG2RE, DF54C	AREA	32
COMMON/INTELK/THOOTS(3).GM.AE.AESO.FLAT.FS032(59)	AREA	33
CATA NOTIST/ FALSE /	AREA	34
2=.5L0*(21+22)	AREA	35
C COMPLTE SURFACE AREAS OF ELLIPSCIDAL SURFACES	AREA	36
IF(NUT151) CU TO 10	AREA	37
NCT1ST=.TRUE.	AREA	38
ESU =FLAT*(2.CO+FLAT)	AREA	3 C
C50 =ALSC*ES0	AREA	40
C =050k1(CSC)	ARSA	4 1
ESJ =AESG-CSC	AREA	42
£4 =05U + +2	AREA	43
10 RUJT1=USGAT(CSQ#21*#2+84)	· · AREA	۷ ۸
AUGT2=D5CAT(C50*Z2**2+E4)	AREA	45
AREAS=CADS(*500*TLIN*DEG2RO*AE *((Z:::*ROUT2=Z1*ROUT1)/dSC+USO*	DLDG((AREA	٨٠
# C#Z2+ROCT2)/(C=Z1+F0OT1)1/C1)	AREA	6.7
RETURN	AREA	4(
REPRODUCIBILITY OF THE	사무단A	ĄΦ
REPRODUCIBILITY OF THE		
ORIGINAL PAGE IS POOR		
OTMAN		



AVGPOT

DESCRIPTION

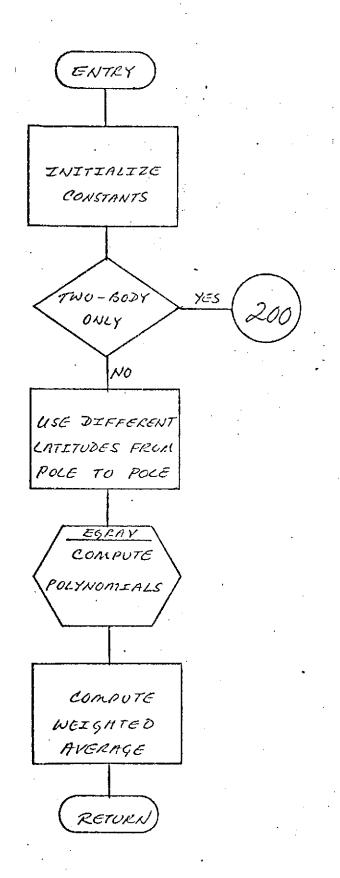
Calls EGRAV to compute Legendre polynomials for geopotential expansion for different latitudes. Evaluates potential at these different latitudes using even zonal harmonic coefficients only.

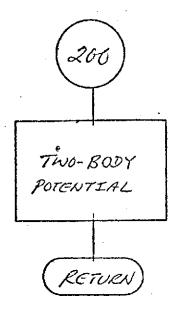
Computes average of these potentials weighting by the cosine of the geocentric latitude.

NAME	AVGPOT
PURPOSE	TO COMPUTE AVERAGE GRAVITATIONAL POTENTIAL OF . FARTH USING EVEN ZONAL HARMUNIC COEFFICIENTS ONLY
CALLING SEQUENCE	X=AVGPOT(NLAT) 6
N SYMBOL TYPE	DESCRIPTION
NLAT 1	INPUT - NUMBER OF LATITUDE DIVISIONS USED IN AVERAGE POTENTIAL EVALUATION
X D=	CUTPUT - AVERAGE GRAVITATIONAL POTENTIAL OF THE EARTH
SUBROUTINES USEC	EGRAV
COMMON BLOCKS	CONSTS FMCDEL INTBLK XYZ- VRBLOK
INPUT FILES	NONE
OUTPUT FILES	VCVE
REFERENCES	GEORYN SYSTEMS DESCRIPTION! VOLUME 1 - GEORYN DOCUMENTATION

· · · · · · · · · · · · · · · · · · ·	•	
DOUBLE PRECISION FUNCTION AVERDI (NEAT)	AVGP	30
IMPLICIT REALXE (A-H.O-Z)	AVGP	31
DOUBLE PRECISION MODEL	AVGP	32
DIMENSIUM FCT(3)	AVGP	33
CCMMCN/CUNSIS/EPI.DTWOPI.DRAD.DRSEC	AVGP	3 ^
COMMONZEMUDELZINDEX1.INDEX2.INCEX3.INDEX4.CS(30.33).MODEL(8)	AVGP	35
COMMUNINTERKITEDUTI, THOOTS, THETES, GM, AE, AESQ, FLAT, FS032(59)	AVGP	36
CCMMON/XYZ/XYZ(b),R.RSO.ISAT.IFURCE(2)	AVGP	37
CCMMUNTVRBLOKIXYSQ.COSLAM(31).SINLAM(31).PR.PPSI.PLAMDA.	AVGP	3 5
• P(33,30).AUFN(30).TPSIM(39)	AVGP	39
EQUIVALENCE (SIMPSI.P(1,1)).(CCSPSI.P(2,1))	AVGP	40
C INITIALIZE CUNSTANTS	AVGP	4.1
F1=1.000-FLAT	AVGP	42
F1SC=F1+F1	AVGP	43
F2F=FLAT+(2.0CC-FLAT)	AVGP	44
THEIG=0.000	AVGP	4.5
XYZ(2)=0.000	AVGP	46
CLAT=180.0D0/CFLGAT(NLAT)	AVGP	6.7
XLA1=-y0.UU0+0.2500#0LAT	AVGP	٨B
U=0.000	AVGP	49
GMR=0.000	AVGP	50
\$UVCUS=0.000	AVGP	51
IF (INGEX2.LT.2) GO TO 200	AVGP	52
C USE DIFFERENT LATITUDES FROM PULE TO POLE	AVGP	53
DO 100 LAT=1.NLAT	AVGP	5 6
PSI=xLAT*DRAD	AVGP	55
REPRODUCIBLE PAR OF THE		~ ~

			•	
	SINPSI=DSIN(PSI)		AVGP	5€
	SPS15G=51HP51++2		AVGP	57.
	COSFS1=USORT(1.000-SPS150)	•	AVGP	53
	RHL=A6*F1/D5GRT(F1S0+F2F*5FS150)	•	AVGP	ረ ባ
	XYZ(1)=RHO*CUSFS1	•	AVGP	60
	XYZ(3)=RHU4SINESI	A	AVGP	61
_	COMPUTE ECLYROMIALS.	•	AVGP	6.2
•	CALL EGRAV(THETG.RASAT.FCT)		AVGP	. 3
	THO TR2=(R*THOT25*COSPS1)**2		AVGP	61
	SUM=0.000	·	AVGP	45
	FN=C.ODO		AVGP	65
	DO 50 N=2.1N0EX2.2	·	AVGP	67
	FN=FN+2+000		AVGP	68
	50 SUP=5UM+FR#ADRN(N)*P(1+N)*CS(N+1)		AVGP	65
	U=U+SUM*COSF31	•	AVGP	70
	GMR=GMR+(GM/R+C+SDC+THOTR2) *CDSPS1		AVGP	7/1
	SUMCUS=SUNCCS+COSPSI		AVGP	72
	100 XLAI=XLAT+DLAT	•	AVGP	73
_	COMPUTE WEIGHTED AVERAGES	•	AVGP	74
·	AVGPUT= (GMK+L)/SUMCOS	•	AVGP	75
	RETURN		AVGP	76
_	COMPUTE TWO-GODY PUTENTIAL		AVGP	77
C	200 GMR=GM/63074c2.5500+(THDT25*6367462.550	O±DCOS(DD1*0.2850) ***2*.		7.3
	AVCFOT=GMR	0+DC03(DF1+0+E3D077+72*)	AVGP	7 .
		•	AVGP	80
	AETUAN END	•	AVGP	61
	₹ N. I.I		~ ~ ~ ~	



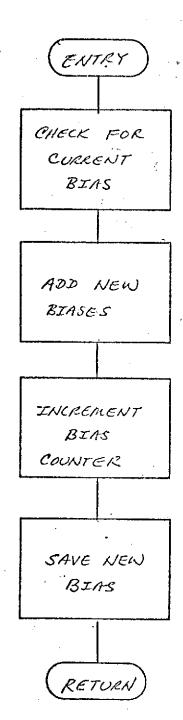


NAME	EIAS				•
PURPÓSE	TC EXTRACT	BIAS START	- STOP	TIMES FROM	DATA AND
CALLING SEQUENCE	CALL BIAS			8	
SUBROUTINES USED	NONE				
COMMON ELECKS -	≱PARAM	СЕРНЕМ	PREBUK	FLXBLK	VP3LDK
INPUT FILES	NONE				
CUTPUT FILES	NONE		·		

			19
	SUBRULTINE BLAS	BIAS	20
	IMPLICIT REAL * E (A-H, D-Z)	HIAS	21
	LOGICAL*1 VEFCEN, PREPRO, TIMING		22
	LOGICAL TWOSTA	81 A S	
	INTEGER*2 MTYFE: NMEAS: PRETYP: CHANEL: BTYPE: BSTANO: ISTANO	RIVS	23
	INTEGER RECNO	BIAS	24
	REAL BLASO, BLASSG	BIAS	25
	DIMENSION NWBIAS(3)	HIAS	26
	CCMMUNIAPARAMI INPAR, INPARI, NBIAS, NSTSTA(2), NGPARC, NORECI(4)	BIAS	27
	······································	DIAS	38
	CCMMUN/PREBER/LAY, USSU(2), SIG(2), SRENUX, ISTA, MITPÉ, NMEAS,	BIAS	2.9
	· PRETYP(2), CHANEL, VHECHN, PREPRO, RECNB	BIAS	30
	CCMMUN/FLXULK/ESTRI(900):855ND(900):BTYPE(900)	HIAS	31
	COMPUNIVEBLUK/EIASC(900).BIASSG(900).BSTANU(900)	BIAS	32
	EQUIVALENCE (NEWTO-NWBIAS(1)), (NEWBI-NWBIAS(2)), (NEWB2-NWBIAS(3))		33
	DATA TPASS/0.10-1/	BIAS	34
	IF(No 1AS. GE. NEFARC) RETURN	BIAS	35
	IF(ISTA.LE.G) FETURN	BIAS	36
	THOSTA-MTYPE.GT.26.AND.CHANEL.NE.TSTA	BIAS	37
	TIMING= *FALSE *	BIAS	38
	IBSTA=ISTANU(ISTA)	BIAS	39
	150 DO 100 I=1.3	BIAS	-
С	CHECK FOR CURRENT BIAS	BIAS	6.1
	100 NWBIAS(1)=0	BIAS	42
	00 1200 I=1.N8IAS	BIAS	6.3
	IF(lusta.ne.astano(1)) GO TO 1200	BIAS	ሉ ሉ
	11=8TYPE(1)	BIAS	45
	18(11.EU.0) GC TO 175	B1 4S	6.6
	1F (TIMING) GD TO 1200 .	BIAS	47
	IF(NTYPE.GT.20.AND.MTYPE.EQ.11) GO TO 175	HIAS	4.8
	IF(MTYPE.NE.(11-(11/3)*7)) GC TO 1200	BIAS	49
	175 IF (DAY-LT-BSTR1(I)) GO TO 1200	BIAS	50
	IF(DAY:LT:BSENC(1)) GO TO 300:	BIAS	5.1
	[F(HSENU(1)-HSTFT(1)) 1200,200,700	BIAS	52
	200 BSTRT(1)=DAY .	DIAS	53
	ESEND(1)=UAY+TFASS	DIAS	54
	300 [F(ETYPE(1)-MTYPE) 400,500,600	BIAS	55
		ı	

BIAS Page 2 of 3 October 1972

•		BIAS	56
400	NEWTB=0	BIAS	57
	60 10 1200	BIAS	58
500	NEWHI=0	BIAS	59
	GO TO 1200	BIAS	60
€00	NE w = 2 = 0	BIAS	é 1
	GO 10 1200	BIAS	62
700	IF(LAY. GT. DSENC(1) TPASS) GO TO 600	BIAS	63
	USENJ(1)=BSEND(1)+TPASS	BIAS	54
	CO 10 300 ·	EIAS	66
	IF(STYPE(1)-MTYPE) 500.1000.1100	61 A S	65
\$00	NEW To = 1	HIAS	67
	60 10 1200	BIAS	58 °
-1000	NEWEI=1	BIAS	စ်မှ
	.GC T.0 120,0	BIAS	7.0
	NEW BIASES	DIAS	71
	NEWEZ=1	ZAIE	.72
1200	CONTINUE	BIAS	73
	DU 1300 1=1.3	BIAS	71
	II=NwblAS(I)	BIAS	75
C INC	REMENT BIAS COUNTER	DIAS	76
	IF(11.EG.U) GC TO 1300	SAIE	77
C SAV	E NEW BLASES	BIAS	78
	IF (NUIAS. GE. NGFARC) RETURN	BIAS	7.9
	NBIAS=NBIAS+1	SAIB	60
	BIASSC(NBIAS)=EIASSC(II)	BIAS	51
	BIASO(N3IAS)=E1ASO(II)	BIAS	2.2
1	BTYPE (NSIAS)=ETYPE(II)	BIAS	93
	BSTRT (NEIAS)=[/Y	DIAS	84
	BSEND(NETAS)=CAY+TPASS	DIAS	55
	*BSTANORRBIAD >= 105TA	อเลร	36
1300	CCRTINUE	BIAS	e7
	IF (.NOT. TWUSTA) RETURN	BIAS	8.3
	TIMING=+TRUE+	BIAS	35
	YWCSTA=.FALSE.	BIAS	è 0
	1BSTA=ISTANU(CHANEL)	BIAS	91
	60 10 150	BIAS	92
	END		•



NAME

BMTWRT

PURPOSE

TO WRITE OUT B-MATRIX

CALLING SEQUENCE	CALL BMTWRT(SUM1.SUM2.INDXCS.GPNO.GPVALO.GPSIG. ESTANC.ISTAND.STAXYZ.FILEND)			
. SYMBOL TYRE	DESCRIPTICN			
SUM1 DP (1)	INPUT - NORMAL MATRIX IN VECTOR FORM			
SUM2 DP	INPUT - RIGHT HAND SIDE			
INDXCS 1*2 (3.1)	INPUT - INDICES OF ADJUSTED GEOPOTENTIAL COEFFICIENTS			
(1) GENO 1+2	INPUT - LCCATIONS OF GEOPOTENTIAL PARAMETERS IN NORMAL MATRIX			
GPVALO OP	INPUT - A PRIORI ESTIMATES OF GEOPOTENTIAL COEFFICIENTS			
GP51G DP (1)	1NPUT - SIGNAS OF ADJUSTED GEOPOTENTIAL PARAMETERS			
ESTAND 1*2	INPUT - MASTER STATION NUMBERS FOR ESTIMATED STATIONS			
1STAND 1+2 (1)	INPUT - STATION KUMBERŞ			
STAKYZ DP	INPUT - STATION COORDINATES			
FILENO 1	DUTPUT - FILE NUMBER FOR THE O-MATRIX TAPE			
SUBROUTINES USED	พมหาย 5			
COYMON BEJCKS	APARAM CPARAM CSTAT CSTINE FLXBLK INITEK INTELK PRIORI TPEBLK VRBLOK			
INPUT FILES	RONS			
DUTPUT FILES	BMATTP - CUTP			
REFERENCES	*GEODYN SYSTEMS DESCRIPTION*			

GEDDYN PROGRAM CPHRATIONS DESCRIPTION - APPENDIX C VOLUME 3 + GEOCYN DOCUMENTATION

MOLITATION DOCUMENTATION

```
BHTE
      SUBROUTINE BMTWRT(SUM1.SUM2.INCXCS.GPNO.GPVALO.GPSIG.ESTANO.
                                                                                     58
                                                                              BMIW
        ISTANC STAXYZ FILENCI
                                                                                     59
                                                                              BMTX
      IMPLICIT FEAL #8 (A-H+O-Z)
                                                                                     50
                                                                              PMTW
     LUGICAL CMPGPF+PRNMAT
                                                                               h TMS
                                                                                     51
      INTLGER#2 GPNC.ESTAND. ISTAND. INDXC3
      INTEGER RECTYF, ZERU . COCE, ESTST A. ONE, BMATNO, BMATTP, ADDR, ADDRD, SFAD, 8MTW
                                                                                     52
                                                                               PATE
         OUTP, FILENC
                                                                               ANTW
                                                                                     64
      REAL MATNAMARESIDASIGANTSUNT
                                                                                     55
                                                                              EMTA
      DIMENSIUN SUMI(1).SUM2(1):INDXCS(3.1).GPNU(1).GPVALO(1).GPSIG(1).
                                                                               PMTA
         ESTANG(1).ISTAND(1).STAXYZ(3.1)
                                                                               витж
                                                                                     € 7
      DIMENSION RECTYP(7) (MATHAM(3)
      COMMON/APPRAM/INPAP, INPARI, NOI AS, ESTSTA, NSAT, NGPARC, NORECI, NPAPAM, PMTW
                                                                                     50
                                                                                     5.
                                                                               RWTW
         NEGTAS MAXPAR
                                                                                     7.0
      COMMON/CF/PAM/NSTA, NMAST, NSTEST, NDTM, MBIAS, NGPC1, NGPC2, NGPCOM,
                                                                               PMTY
                                                                                     71
         NCSEST, CMPCPC, LIMI, LIME, NDEN, NDENST, NTIDST, NTICEN, INNRSW,
                                                                               PATE
                                                                                     72
                                                                               BALL AL
         NOUNST INDICENS
                                                                                     73
                                                                               EHTE
      CUMMUNICSTATIVESID. SIG. NMTCT. WISUMT
                                                                               PHTW
                                                                                     7 6.
      COMMUNICETINE/MEASHG(282) NOBS LEASE
                                                                               QMIW
                                                                                     75
     CUMMUNIFLXELK/UMATRX(1001), VALUE(1000), V(3), FLX31(21)
                                                                               SMTE
                                                                                     75
      COMMUNZIA ITOKZINITRI(A4), FRNMA T. BMATAO, INITEZ(11).
                                                                                     77
                                                                               BMTW
      CJMMJNZIN THEK ZINTBI (118), ADDR (2), ASJRD (2), 3RAD (2), INTB2(3)
                                                                               Br⁴T⊁
                                                                                     76
      CO4MUN/PRIDF1/FLEM0(6.2), PRIGB1(78), CD(2), CDD(2), EMISS(2)
                                                                               BMTW
                                                                                     79
      COMMON/THEBUN/INTP, CUTP, ITAPES(10)
                                                                               PINTA
                                                                                     50
      COMMUNIVALEORIVEST(56), LABEL(1000), IROW(1000), IVRE2(118)
      DATA RECTYP/10001.10002.10003.10011.10012.10013.-19901/
                                                                               BMTY
                                                                              DALK
      HOSELMANTEN VINCENTAR VINCE
                                       Z.QNEZIZZERUZOZ:CODEZSZ
                                                                               PMTA
      DATA CMATTENTIN
                                                                               HMTW
      IROXRU(I)=NDIP=(I-1)-(I=(I-1))/2
                                                                               BUTY
      NCUN=4AXG(47DP(1),ADDP(2),ADDRC(1),ADDRD(2),SRAD(1),SRAD(2))
                                                                               PHTM
                                                                                     Bć.
      NPARM=NGF CEM+ 2WMMAST+6*NSXT+NCEN
                                                                               9HTW
C WRITE HEADER RECORD
                                                                               BYTX
                                                                                     2.0
      NELHENDARM+1
                                                                                     ے ع
                                                                               DUTE
      V(1)=∧ToUNT
                                                                               SYTV
                                                                                      20
      V(2)ニッTSLPT
                                                                               PMT2
                                                                                     . 71
      V(3)=0.000 .
      WRITE (SMATTO) RECTYP(1), EMATNO, NPARM, NELM, V, NOBS, MATTYP, MATRAM
                                                                               DATE.
                                                                                      02
                                                                               PHIN
                                                                                      Q 3
C FREM THIS POINT TO LARGE BO...
C RECROER SURT INTO PROPER OFFEE FOR B-MATPIX
                                                                               BYTY
                                                                                      O.C.
      IF (PRNAAT) WRITE (OUTP.10001) BMATNO.NPARM.NOBS
                                                                               BYTK
C DENUMBALIZE THE PARTIALS FOR GEOPOTENTIAL CUEFFICIENTS
                                                                               BUTE
                                                                                      コム
                                                                               들써도까
      IF (NUFCEMALE AD) GO TO 35
                                                                               BALKA
                                                                                      34
      KENCSEST+NGPCEM
                                                                               EMTW
                                                                                      50
      DU 10 I=1.NGPCDM
                                                                               BMTW 100
      K=K+1
      LABEL(I)=(INDXCS(1-K)*100+INDXCS(3-K))*100+INDXCS(2-K)
                                                                               BMTW 101
                                                                               BMTW 102
      IRUALI)=CENCLI)
                                                                               94T# 103
      VALUE(1) = CPVALO(1) = CPS 1Cf 1)
                                                                               HALK 100
      J1=[KCK[]]
                                                                               34TK 105
      11=1N) x N L (J1)
                                     REPRODUCIBILITY OF THE
                                                                               23TW 107
      CO S USULANDIN
                                      ORIGINAL PAGE IS POOR
                                                                               BATE 1977
      IJ=[1+J
                                                                               DHIY 109
      SUM1 (IU) = 3UM1 (TU)/GPSIG(I)
                                                                               PHTH 130
    5 CUATINUE
                                                                               94TW 110
      13=31
                                                                               P476 111
      03 7 11=1.31
```

```
PMTW 112
     SUMI(IJ) = SUMI(IJ) \times GPSIG(I)
                                                                            BMTW 113
     IJ=IJ+NJIM-II
                                                                            DMTW 11A
   7 CONTINUE
                                                                            UMTA 115
     SUM2(J1)=SUM2(J1)/GPSIG(I)
                                                                            BMTW 116
  10 CUNTINUE:
                                                                            BMTW 117
     K=HGPCCM-1
                                                                             BHTW 118
     DO: 30 I=1 K
                                                                            BMTW 119
      1PCUS1=1+1
                                                                             SMTW 120
     CO 20 J=IFLUSI.NGPCCM
                                                                             BMT 121
     IF (LABOLTI). LE. LAMEL(J)) CD TC 20
                                                                             BMTW 122
     NTEMP=LAttL(I)
                                                                             PMTW 123
      LASEL(I)=LASEL(J)
                                                                             RMTW 124
      PARETA=(U)=NTSMP
                                                                             BMTW 125
      KTEMP=IKC*(1)
                                                                             BMTW 126
     ·IRU%(I)=IEO%(J) ·
                                                                           . BMTW 127
      PRSTA=(L) AUST
                                                                             BMTW 128
      TEMP=VALUE(I)
                                                                             BMTW 120
      VALUE(I) = VALUE(J)
                                                                             9MT4 130
      VALUE(J) = IFYP
                                                                             BMTW 121
   20 CONTINUE
                                                                             BMT / 132
   30' CONTINUE
                                                                             BMTW 135
   35 IF (NMAST+EH+C) GO TO 65
                                                                             BMT# 134
C ADC STATION ACCUSTMENT TERMS TO B-WATRIX
                                                                             BMTK 135
      II=NDIM-34NMAST-NGPCOM
                                                                             PMTH 136
      L=0
                                                                             BMTW 137
      DU 60 I=1.NMAST
                                                                             9MTW 136
   45 L=L+1
                                                                             BMIW 130
    TIF (NUMBRE(LIESTANDINSTEST) EQ.O) GO TO 40
                                                                             BMTW 160
      K=NGPCCM+(1-1)*3
                                                                             BMT# 151
      Du 50 J=1.3
                                                                             SOI FING
      LAUEL(J+K)=(J+4)#10000+157ANO(L)
                                                                             BMTW 143
      IRU#(J+K)=11+J+K
                                                                             BHT# 166
     .VALUE(J+K)=STAXYZ(J+L)
                                                                             BMTW 145
   50 CUNTINUE
                                                                             BHTH 145
  150 CONTINUE
                                                                             ENTW 167
      IF (MMASTALTA 2) GO TO EE
                                                                             DATH 14-0
      K=NGPCCA+3
                                                                             BMT# 149
      L=3*(NMAST-1)+NGPCOM
                                                                             94TW 150
      CG 57 I=K.L.3
                                                                             8MTK 151
      Cu 30 J= I+L+3
                                                                             BMTW 152
     IF (LABEL(1-2).LE.LABEL(J+1)) CO-TJ 56
                                                                             94TY 153
    . 90 ≎≎ 1J=1+3
                                                                             BYTH 154
      5-L1+1=[1
                                                                             DMTW 155
                                                                             84Tx 156
      NTEMPELACEL(II)
                                                                             B4T+-157
      LAGEL(II)=LASSEL(JI)
                                                                             BMTH 15F
      LAUEL (J1) = TTTMP
                                      REPRODUCIBILITY OF THE
                                                                             DHTY 159
      NTEMP=IFCW(II)
                                                                             947# 150
                                      ORIGINAL PAGE IS POOR
      \{10\} \times CPI = \{11\} \times \{11\}
                                                                             DATM 161
      IRU#(Jt)#KTEMP
                                                                             BYTH 162
      TEMPSVALUE(11)
                                                                             B4T4 153
      VALUE(II)=VALUE(J])
                                                                             PHTH 166
      VALUE (JI) * TEMP
                                                                             กงาห 155
   53 GUNTINUE
                                                                              94TW 166
   SE CONTINUE
                                                                              2MTW 147
   57 CONTINUE
```

```
BMTW 158
C ADU ELLMENTS, OHAG, & SOLAR RADIATION
                                                                            94TW 169
   65 LENPARM-64NSAT-NCUN
                                                                            BMIN 170
      CO 30 I=1.NSAT
                                                                            BMT# 171
      IF (SRAD(I).LE.0) GO TO 61
                                                                            EMTW 172
      L=L+1
                                                                            BMTW 173
      £AUEL(L)=201+100*1
                                                                            BMTW 174
      IROW(L)=NSAT *C+SRAD(I)
                                                                            BWT# 175
      VALUE(L)=EMISS(I)
                                                                            BMTW 176
  $1 IF (ADDR(1), LE. 0) GO TC 62
                                                                            SMTW 177
      L=L+1
                                                                            BMIW 178
      LAUEL(L)=111+100*1.
                                                                            BMTW 179
      (I) POCCA+6 * TA27 = (I) WUSI
                                                                            34TW 180
      VALUE(L)=CD(I)
                                                                            BMTW 131
   62 IF (ADDRO(I).LE.O) GO TO 63
                                                                            BMTW 132
      L=L+1
                                                                            PMTW 133
      LADEL(L)=112+100*I
                                                                            94TW 184
      12016(L)=NSAT # 6+ADDRD(1) ~
                                                                            BUTY 135
      VALUE(L)=CDD(1)
                                                                            BMTW 186
   63-00 70 J=1.6
                                                                            BATH 137
      LAUEL(L+J)=100#!+J
                                                                            P31 birn
      さゃ(エーエ)+C=(レ+コ)*ウボ
                                                                            BMTW 139
      VALUE(L+J)=ELEMO(J,I)
                                                                            BYTW 170
   70 CUNTINUE
                                                                            BMTW 191
      L=L+6
                                                                            BMTY 192
   RO CONTINUE,
                                                                            PHTH 193
C PRINT B-MATRIX LABELS
                                                                            BATE 19A
      IF (PANKAT) WRITE (DUTF, 20001)
      PRITE (BYATTE) PROTYP(S), ZERO, (LAREN (II, I=1, NDARM)
                                                                            ANTW 10F
                                                                            94TW 196
      IF (PRNMAT) WRITE (OUTP+20002)
                                                                            94TW 197
      IF (PHNAAT) KRITE (DUTP.10002) (LAJEL(I).I=1.NPARM)
                                                                            BYTW 134
C PRINT S-MAIRIX PY ROWS
                                                                            BMTW 199
      IF (PHNMAT) WRITE (DUTP-2000)
                                                                            BMTW 200
      DU 130 JETINPARM
                                          REPRODUCIBILITY OF THE
                                                                            BMT# 201
      J1=180W(J) .
                                                                           JUNEAU SCS
                                          ORIGINAL PAGE IS POOR
      (IL)SMUE=(I)XSTAMm
                                                                            34TW 203
      CU 110 1=1.NPAFM
                                                                            9"TW 204
      11=180x(1)
                                                                            BMIW 205
      IJ=INDXNC(MINC(II+JI))+MAXO(II+JI)
                                                                            B4TW 206
      EMATRX(I+1)=SUM1(IJ)
                                                                            94TV 207
  110 CUNTINUE
                                                                            PMTW 208
      -WRITE (SMATTE) RECTYP(3), (BMATEX(1), 1=1.NELM)
      IF (PROMAT) WEITE (OUTP.10003) LABEL(J):(GMATRX(I):I=1:NELM)
                                                                             34TV 209
C SET PARAMETER IDENTITIES
                                                                            BMTW 210
                                                                            33TW 211
  130 CONTINUE
      WRITE (BMATTE) RECTYP(4), 6MATNC, ONL, NPARM, (ZERO, 1=1,7), CODE, MATNAMENTA 212
       IF (PRNMAT) AFITE (OUTP.10011) SMATNO, NPARM
                                                                            BIS WINE
       WRITE (SMATTE) RECTYP(E).(LAPEL(I).I=1.NPARM)
                                                                            BMTW 214
       IF (PRNMAI) ASITE (OUTP+20003)
                                                                             9478 215
       IF (PHNMAT) WRITE (OUTP, 10012) (LASEL(I), I=I, NPARM)
                                                                             BMTW 215
                                                                             BMT# 217
       ARITÉ (SMATTO) RECTYP(6), (VALUE(1), 1=1, NP4RM)
                                                                             BULL SIC
C PRINT 2 THAILER RECORDS
       IN (PARAMILE (I) BUJAV) (F1001-9TUC) ETIJA (IGRAAM) BI
                                                                             BMT# 219
       WRITE (SMATTR) FECTYP(7), (ZEFO, i=1,14)
                                                                             RMTW 220
       WHITE (SMATTH) PECTYP(7), (ZERO,1=1,14)
                                                                             94TW 221
                                                                             BUTW 222
       ERL FILE EY/TIP
                                                                             441K 223
       FILENDER TURNO+1
```

```
PATE 224
      WRITE (OUTP.20005) BMATNO.FILEND.BMATTP
                                                                                BMTW 225
      RLTURN
                                                                                BMTH 225
10001 FORWATE (*13-MATRIX NO. "+16+" WITH"+14+" ROWS AND
          16. * WEIGHTED OBSERVATIONS. */)
10002 FORMAT ((19X.7(10X.15)/))
10002 FURRAT (1X.15.10015.6.1X, ***,7015.0/(22X, ***,7015.0))
                                                                                BUTK 229
10011 FORMAT (*18-MATRIX NC. *. 16. *. * 15. * A-PRIORI PARAMETER VALUES. */)
                                                                               HMTY 230
                                                                                BYTX 231
10012 FURMAT ((4X.8(10X.15)/))
                                                                                BUTK 232
((6.210891-XS)\) TARRUS 51001
20001 FURNAT (*CEXPLANATION OF LASELS*//IX.*GEOPHTENTIAL*, 8X.*C(N.M)*,
                                                                                32TH 233
          AX, *1 MMNN*/1X, *COEFFICIENTS ** EX, *S(N,M) ** AX, *2MMNN*//1X,
                                                                                BMTW 234
          *STATICN JUJUJ-KRX, *X(UUUJ)**, XE, *(CUUL)X*, XB, *LULU // IXATES*, 9X,
                                                                                94T4 235
                                                                                BM13 275
          *Y( JJJJ) *,3X,*5JJJJ */X13\* (Z(JJJJ) *,3X,*7JJJJ *//1X,
          *SOLAR RADIATION *. 5X, * CR *. 1 CX. * 301 *//1X. * ORAG CONSTANT *, 7X,
                                                                                E414 23"
                                                                                94Tm 238
          *CD*,1CX, '211'//1X, 'ERAG DOT CONSTANT',3X,
                                                                                संधार
          *COD*, +x, *212*//1X, *FOSITION*,12X, *X*,11X, *101*/1X, *AND*,17X;
                                                                                      239
          *Y*,11X, 11021/1X, TVFLOCHTY*,12X, 12*,11X, 11031/1X, TVECTURS*,
                                                                                3414 240
          13A, "XDOT", EX, "10A "/21X, "YDCT", EX, "105"/21X, "ZDQT", 8X, "105"/)
                                                                                5 1 T a
                                                                                BATA SAS
20002 FURMAT (74X, (COLUMN LABELS(/)
                                                                                BRITY
                                                                                      243
23003 FURMAT (SEX, PARAMETER LARFLS!/)
2000) FURNAT ("C BOW". SX, "PIGHT-HAND", 2X, 46 ("#4), " NORMAL B-MATRIX ",
                                                                                9313
                                                                                      244
                                                                                B4TW 245
          45( ***)/ LASEL ** 7X + "SIDE * + EX + *** )
20005 FURMAT (*18-MATRIX NO. ". 16." HAS BEEN WRITTEN UN FILE NO. ". 14.
                                                                                BMIA
                                                                                      200
                                                                                SMIN
                                                                                      247
          * OF CLTPUT UNIT NO. (+ 13. 1. 1)
                                                                                 841x 245
       END
```

NAME BSCOWD ENTRY POINT : PURPOSE BS CMP1 INITIAL IZATION TO COMPUTE ELECTRONIC BIASES AND CORRECT NORMAL **DSCOMP** EQUATIONS FOR EXTRACTION OF THE ELECTRONIC MIASES. CALLING SECUENCE CALL BSCMP1(BTWA,BTWD,BTWD,BTIME,SUM1,SUM2,NEBIAS, RESTNORNUMPER. DETYPE (PARNOS) SYMPOL TYPE DESCRIPTION) ၁ SCRATCH - VECTOR OF SUMS OF PRODUCT OF BLAS PARTIAL AWYR (NEPIAS.1) TIMES WEIGHT TIMES PARTIALS OF ADJUSTED PARAMETERS ŊΡ SCRATCH - VECTOR OF SUMS OF PRODUCT OF BLAS PARTIAL BTWC TIMES WEIGHT TIMES RESIDUAL (1) SCRATCH - SUMS OF WEIGHTS BIWE ЭP (1) SCRATCH - BIAS TIME ARRAY HISED IN DETERMINE START OF PTIME 70 (1) NEW DASSES .. INPUT/OUTPUT - NORMAL MATRIX SUMI 20 (1) SUME * INPUT/DUTPUT - RIGHT-HAND SLDE DE NORMAL EQUATIONS (1) INPUT - MAXIMUM NUMBER OF FLECTRONIC BIASES IN ANY **NEBLAS** ONE PASS **REST NO** INPUT - ELECTRONIC BIAS STATION NUMBER 1 4 2 (1) NUMPER SCRATCH - ARRAY FOR COUNTING THE NUMBER OF 1 # 2 MEASUREMENTS IN THE PASS (1) INPUT - ELECTRONIC BIAS TYPE NUMBERS REPRODUCIBILITY OF THE PETYPE 1 62 ORIGINAL PAGE IS POOR (1) PARNOS INPUT - MEASUREMENT PARAMETER NUMBERS 1 4 2 (1) CALLING SECUENCE CALL ASCURP(INIAS, PESID, SIG, TIME, PMPXC, LINNER) SYMPOL TYDE DESCRIPTION INIAS INPUT - SLECTRONIC BIAS INDEX NUMBER 1 + 1

INPUT - MEASUREMENT RESIDUAL

RESTO

```
SIG
                   INPUT - MEASUREMENT SIGMA
                   INPUT - TIME OF MEASUREMENT
   PMPXC
                   INPUT - MEASUREMENT PARTIALS
    (1)
   LINNER __#4
                   INPUT - LOGICAL SWITCH -- .TRUE. = LAST INNER
                                                       ITERATION.
SUBROUTINES USED
                   STALE2
COMMON BLOCKS
                   MA SA GA
 INPUT FILES
                   NONE
 CUTPUT FILES
                   NONE :
```

	SUBROUTINE BSCMP1(BTWA.BTWD.RTWB.BTIME.SUM1.SUM2.NEBIAS.BESTNO.	ASCD	7 a
	• NUMBER.BETYPE.PARNOS)	RSCO	70
	. SUMB NEBTAS, PESTNO, NUMBER, HETYPE, PARNOS)	8500	PC
	IMPLICIT REAL*3 (A+H+C+Z)	BSCO	۴٠
	LOSICAL CMPGPRILINNEPIARCPAR	așco	рþ
	INTEGER#2 PARNUS.BESTRO.NUMPER.BETYPE	BSCO	ĘΚ
	INTEGER RECNUL + PAR MAX	BSCO	84
	REAL BRIME, TIME	BSCO	65
	DIMENSION BIWA(NEBIAS+1)+BIWD(1)+PIWP(1)+	ひゃさつ	28
	 BTIMI(1).SUMI(1).SUM2(1).PMPXC(1). 	ดระก	47
	PARN 13 (1) * MESTNO(1) * NUMBER(1) * PET YPE(1)	BSCO	g n
•	COMMONANT ARAMAINPAR, INPARI, NSTRIA, NGIAS, NSAT, NGPARC,	BSCO	وع
	• RECNOT + NEARAM NATASE + PARMAX	esco	9 C
	COMMON/CPARAY/NSTA.NMAST.NSTEST.NOTM.MBIAS.	BSCO	91
	• NGPCI • NPGC2 • NGPCOY • NCSEST • CMPGPH • LIVI • .	BSCD	0 2
	• LIMP. NOEN. NDENST. NTIDST. NTIDEN. INNRSW.	BSCO	ĊЗ
	• NC045T • NCCONS	risc o	ċږ
	INDXNC(I) = NDIM*(I-1) + (I*(I-1))/2	BSCD	95
C	INITIAL IZE	BSC O	٥K
	NSTART = NDIM - 3*NMAST-NGPCOM-NTIDEN+1	ธระก	07
	PETUPN	8500	92
	ENTRY BECOMP(IBIAS. RESID. SIG. TIME. PMPXC. LINNER)	BSCO	09
	IR1=1	BSCO	100
	IB2 =N814SE	BSCD	tor
	REPRODUCIBILITY OF THE	, BSCO	102
	ORIGINAL PAGE IS POOR	PSCO	. 03
	103=131 ORIGINAL PAGE IS FOOR	esco	• ^ 4
C	IF NEW PASS HAS STARTED. SOLVE FOR PIAS ON PREVIOUS PASS.	BSCO	105
	IFOTIME.GT.(GTIME(IBIAS)+C.NE-1)) OD TO SCO	BSC ()	106
C	SUM INTO NORMAL EQUATIONS FOR ELECTRONIC BIASES	BSCD	1 ቦን
	150 WT = $1.(5) \times (51645)$	ብ ፍ ሮባ	1 C =
	NUMBER(13EAS)=NUMBER(INTAS)+1	#SCO	100
	70 200 1=1. PARMAX	BSCO.	* 10
	11 = PARN IS (U)	9500	
	\cdot		

```
BSC0 112
   . [F([].Ca.0] OD TO 200
                                                                            BSCO 113
     (L) 5 x q x c * TW + ( L * 2 A I B I ) A W T B = ( L * 2 A I B I ) A W T B
                                                                            85CO 114
  200 CONTINUE
                                                                            BSCO 115
      BEND(IB!AS)=FTWD(IB!AS)+WT =RESID
                                                                            8500 116
      RTWR(|HIAS)=ETWO(|RIAS)+WT
                                                                            BSC0 117
      BTIME(IBIAS)=FIME
                                                                            B500 118
      RETURN
                                                                            8500 110
  500 ARCPAP="ISTAP".GT.NDIM .OP .. NOT. LINNER
                                                                            8500 1,20
  600 J=0
                                                                            BSC0 121
      N=NUM9E ₹(191)
                                                                            BSC9 122
      IF (N.LE.)) GO TO 1200
                                                                            BSC0 123
C COMPUTE BIAS
                                                                            BSC0 124
      ATWAL=1.300/PTWB(IPL)
                                                                            BSCO 125
      (IBI)@WY5*IFKYB=2Al@
                                                                            8500 124
      ISTA=BESTNO(IB1)
                                                                            BSC0 127
      SIG1=DSORT (DFLOAT(N) * ETWB1)
                                                                            BSC0 123
      MTYPE=BETYPE(IP1)
                                                                            85C0 129
      PRINT 2000 ISTA MEYPE + BIAS
                                                                            ASC 0 *3(
2000 FORMAT(*) ***** STATION*.13.* TYPE*.12.* BIAS = *.G25.16)
                                                                            BSCD 131
C UPDATE STATISTICAL INFORMATION
                                                                            BSC0 132
      CALL STAIF2(ISTA, MTYPE, SIG1, SIA5, N. NSAT)
                                                                            BSCD 137
C CCCRECT NORMAL MATRIX
                                                                            RSC0 134
      MARARIA 1 CCP OG
                                                                            FISCO 135
      SUM=RTWA(ID1.1) # PT WO1
                                                                            B400 136
      DO 700 K=I.NPAPAM
                                                                            BSC0 137
      L=J+K
                                                                             BSCC 132
  700 SUNI(L)=SUNI(L)-SUM#BTWA(IB1.<)
                                                                             BSC0 133
      SUM2(I)=SUM2(I)=SUM#8TWD(IBI)
                                                                             BSC0 140
      BIWA(IPL.I)=0.000
                                                                             BSCO 141
      IF (ARCPAR) GO TO 900
                                                                             PSC0 142
      MICHITALTEN CLB OD
                                                                             BSC0 143
      L=J+K
                                                                             8500 444
  BOD SUM1(L)=SUM1(L)-SUM#BTWA(IB1.K)
                                                                             BSCO 145
  900 J=J+ND14 -I
                                                                             8500 144
      IF (APCPAR) GO TO 1200
                                                                             850h 147
      J=INDXNO(NSTART)
                                                                             RECO TAR
      DO 1160 TENSTART . NOTM
      SUM =BTWA(IB1.I)*BTWB1
                                                                             Beco 140
                                                                             8500 150
    DO 1000 K=1.ND1M
                                                                             BSC0 151
      L=J+K
 1000 SUM1(E)=SUM1(E)-SUM48TWA(TB1.4)
                                                                             BSC0 152
                                                                             BSCC 153
      SUM2(I)=5UM2(I)+SUM#BIWD(IR1)
                                                                             PSCO 154
      BIWA(IRLaI)=0.000
                                         REPRODUCIBILITY OF THE
 1-100 J=J+V0I 1-1
                                                                             B500 155
                                         ORIGINAL PAGE IS POOR
                                                                           PSCO 156
C ZERD SUMMING APRAYS
                                                                             BSCO 157
 1200 BTWA([P[]=0.CDC
                                                                            ASCO "FE
       960.0=()91)0WTE
                                                                             85001159
       BT [ YE ( ] 41 ) =0 .0
                                                                             8500 160
       NUMBER (IHI) =C
                                                                             191 0328
C IF LAST CALL FOR ARC+ PROCESS LAST PASS FOR FACH ITERATION (GD TO 600) PSCO 169
                                                                             Becoling
       [F([61._F.182] GO TO 600
C AFTER ALL PARKES COMPLETE: PRIVAN IS LAST CALL FOR ITERATION
                                                                             RECO + 41
       TRITATAS.CO.S) RETURN
                                                                             RECO TEE
                                                                             BSCO TEA
       181=182
C SAVI TIME OF LAST MEASUREMENT FOR CHECK ID DETERMINE NEW PASS
                                                                             Hery'tra
       RTINE(INI) #TIME *
                                                                             ଶ୍ରଣ୍ଡ ଏହାର
                                                                             4500 * CS
       GO TO 415
                                                                             esco +~:
       È NU:
```

NA:	ME ,		CARCKN
PU	RPOSE 🗽		TO SET UP VARIABLE STORAGE ARRAYS AND TO INITIALIZE SUBROUTINES USING THESE APRAYS
CA	LLING SE	QUENCE	CALL CBROWN(IADDR, IBIAS, BBIAS, KSUM, NSUM, PLMN, ISTAND, ENV, SUMI, GRPAR, INDXCS, SUME, XYZSIG, XFIT, XYZ, PMPXO, XI, PARKÖS, MENSE, DENCON, CSUM, EBIAS)
	SYMUCL	TYPE	LESCRIPTION
	IADER (18)	1	IMPUT - ARRAY CONTAINING ADDRESSES OF THE VARIABLE STORAGE ARRAYS
	181AS. (1)	1*2	INPUT - VARIABLE STORAGE ARRAY NO. 1 FOR BIASES
•	BUIAS	D P	INPUT - VARIABLE STORAGE ARRAY NO. 2 FOR BIASES
	KSUM (I)		INPUT - VARIABLE STURAGE ARRAY NO. 1 FUR STATISTICS
	PUZN	1	INPUT - VARIABLE STORAGE ARRAY NO. 2 FOR STATISTICS
	PLHN (1)	دن	INPUT - VARIABLE STORAGE ARRAY NO. 1 FOR STATIONS
	ISTANU (1)	I*2	INPUT - VARIABLE STORAGE ARRAY NO. 2 FOR STATIONS
٠	ENV (1)	DP	INPUT - VARIABLE STORAGE ARRAY NO. 3 FOR STATIONS
	SUM1 (1).	ДP	INPUT - VARIABLE STORAGE ARRAY NO. 1 FOR NORMAL EQUATIONS
	GRPAR	DP	INPUT - VARIABLE STORAGE ARRAY NO. 1 FOR PARTIALS
	INDXCS	1 * 2	INPUT - VARIABLE STORAGE ARRAY NO. 1 FOR GEOPOTENTIAL
	\$UM2 (1)	DP	INPUT - VARIABLE STORAGE ARRAY NJ. 2 FOR NORMAL FOUNTIONS
_	XYZSIG	R	INPUT - VARIABLE STORAGE ARRAY NO. 4 FOR STATIONS
	XF1T (1)	DP .	INPUT - VARIABLE STORAGE ARRAY N. 1 FOR INTEGRATOR
	XYZ	UP	INPUT - VARIABLE STORAGE ARPAY NO. 5 FOR STATIONS

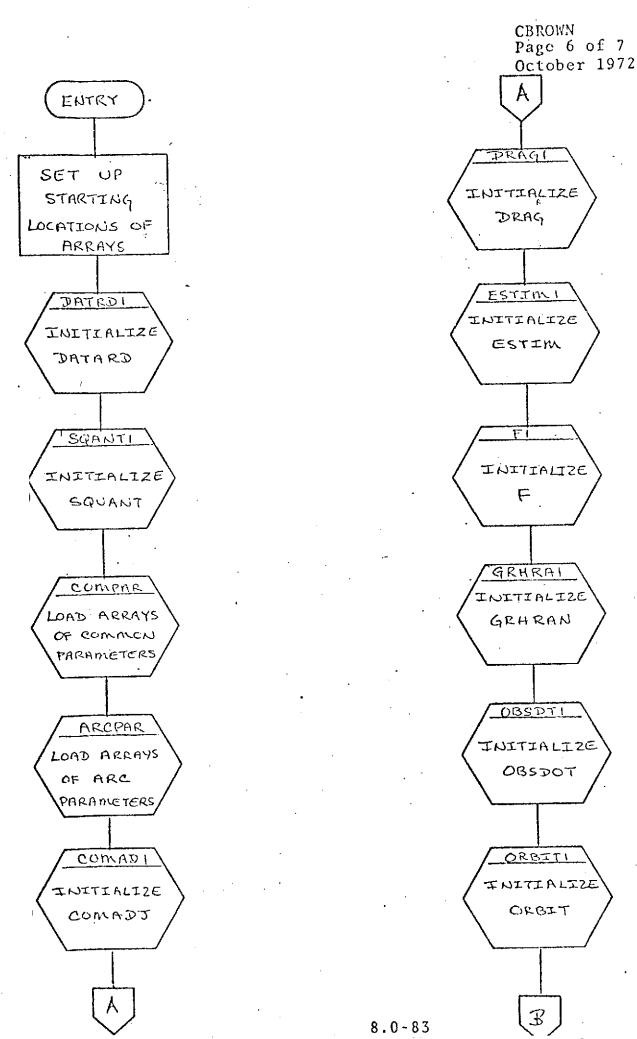
```
(1)
   рирхо (10Р
                   INPUT - VARIABLE STORAGE ARRAY NU. 2 FOR PARTIALS
   (1)
                          VARIABLE STORAGE ARRAY NO. 1 FOR
   ΧI
   (1)
                           INTERPOLATOR
                   INPUT - VARIABLE STORAGE ARRAY NO. 1 FOR PARABETER
   PARNUS
   (1)
                           NUMBERS
                   INPUT - VARIABLE STORAGE ARRAY NO. I FOR DENSITIES
   DENSE
   (1)
                   INPUT - VARIABLE STORAGE ARRAY NO. 2 FOR DENSITIES
   DENCCH
   (1)
                   INPUT - VARIABLE STORAGE ARRAY NO. 3 FOR STATISTICS
   CSUM
   (11 ·
                   INPUT - VARIABLE STORAGE ARRAY NO. I FOR ELECTRONIC
   EDIAS
           1 * 2
   ( I )
                           BIASES
                                                      ORBIT1
                                                                  PROCS1
                                          1 CAMOD
                               BSCMP4
SUDROUTINES USEC
                   CLEAR
                               VE VAL 1
                                                      SNEGA
                                                                  COMPAR
                                          F1
                   STAIF1
                               RESPR1
                                          INCRUZ
                                                      DRAG1
                                                                  CLEARS
                   ESTIME
                   TRUEP1
                               ARCPAR
                                          10STAG
                                                      GRHRAI
                                                                  NONAME
                                          SQANTI
                                                      TWOST1
                   COSOTI
                               PREDCI .
                                          тисиоэ
                                                      CSTINE
                                                                  VRJLOK
                               CPARAM
COMMON BLOCKS
                   APARAM
INPUT FILES
                   NONE
OUTPUT FILES
                   NONE
```

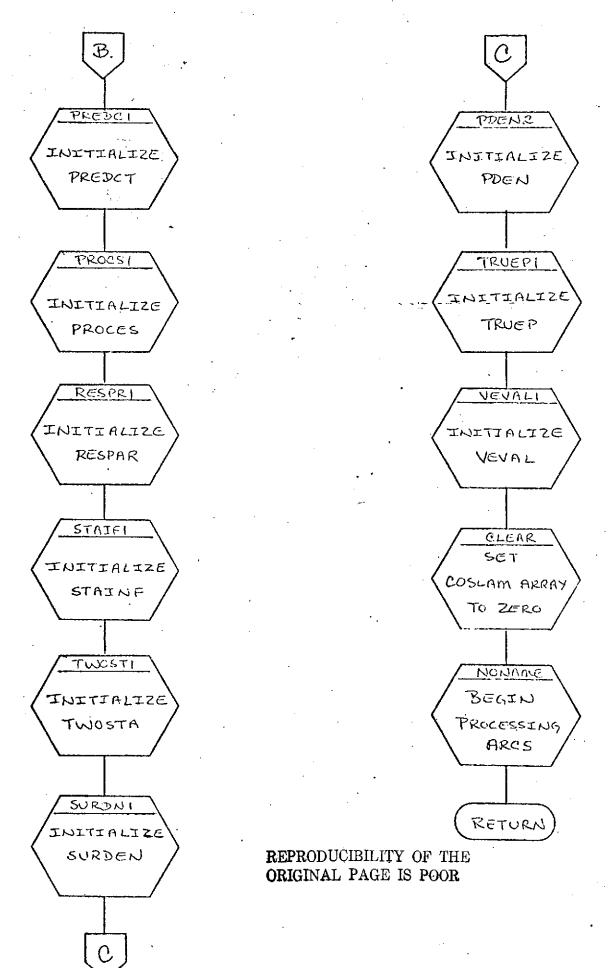
SUBFOUTING CAFCWN(TADDR: 181AS: EBIAS: KSUM: NSUM: PLHN: ISTANO: ENV: C	293	94
SUM1, GRP AR , INDXCS, SUM2, XYZSIG, XF IT, XYZ, PMPX0, XI, PARNOS, C	ម្រមព	ó2
DENSE, DENCON, CSUM, EBIAS) Control of the	BRC	ÿ 6
IMPLICIT REAL *E (A-H+O-Z)	BRO	97
DIMENSION (ADDR(18), IBLAS(1), BBLAS(1), KSUM(1), NSUM(1), PEHN(1), C	BRO	9.6
• ISTANU(1) + ENV(1) + SUM1(1) + GRPAR(1) + INDXCS(1) + SUM2(1) + C	BRO	ōΰ
xYZSIG(1), XFIT(1), XYZ(1), PMFXO(1), XI(1), PARNOS(1), DENSE(1)	เหลด	100
DIMENSION DENCEN(1).CSUM(1).FBIAS(1)	SRO	101
INTEGER*2 IEIAS, ISTANU, INDXCS, PAPNUS, EBIAS	BRO	102
INTEGER ESTSTA.CSUM - C	:DRC	103
LOGICAL CMPGPR . C	BRO	100
REAL XYZSIG,RESALL,OUTCON C	880	105
COMMUNZAPAKAMZINPAR.INPARI, NEIAS, ESTSTA.NSAT, NGPARC, NORECI, NPARAM, C	BRO	106
• NEBIAS+MAXPAR	เลยด	107
CCMMUN/CPARAM/NSTA,NMAST,NSTEST,NDIM,MBIAS,NGPC1,NGPC2,	ខេត្តព	301
• NGPCOMINGSESTICMPGRPILIMIILIMZINDENINDENSTINTIDSTINTIDENI C	ORB	109
C CONSTINUES OF	ខេត្តព	110
COMMUNICUMBUTIANSALL.OUTCON.MINUUT.MAXOUT.LITRES.MAXSAT.MAX2IN. C	BRO	111

```
CBRO 112
         NSTART. NEQUMX. I VAR. LORDER. NARCS. KSTARD. LSTART (6)
      COMPONZESTINEZPEASNO(283) (LEASE
                                                                            CBRC 113
     COMMONZVRBLUKZCOSLAM(66),PR(1059)
                                                                             CBRD 114
C COMPUTE INDICES OF STARTING LOCATIONS OF DIFFERENT ARRAYS TO BE USED
                                                                             0030 115
      NBIASE=NEUIAS
                                                                             CBRC 116
                                                                             CERO 117
      131=1
                                                                            CSRC 110
      IB2=ID1+4*MDIAS
                                                                             CBRO 119
      193=102+4#MBIAS
                                                                             CBRC 120
      EXTACKAM=ETÁRM
      IH4=103+4*(Md1AS+MSAT3+NCSEST)
                                                                            CBR0 .121
      185=164+44(MBIAS+MSAT3+NCSEST)
                                                                             CBRD 122
      186=165+M81A5
                                                                             CBRO 183
      IB7#IC0+MBIAS
                                                                             CBRO 124
                                                                             CBRC 125
      IC1=IB3+4*(MB1AS+MSAT3)
                                                                             CBRD 126
      IC2=104+4*(M01A5+M5AT3)
                                                                            CBRO 127
      IC3=167+M31AS+MSAT3
                                                                             CBRO 128
      1081=1
                                                                             CBRC 129
      IBCI=IBB1 +MBIAS+MSAT3
      IBD1=18C1+NCSEST
                                                                             CSPO 130
                                                                            CBSO 131
      IdC2=1BD1+NTICST
                                                                            CHRO 132
      KTASHMBIAS+MSAT3
                                                                             C330 133
      NSTAT=NSTA+ MAXEAT
      IP=1
                                                                            CBRC 134
      IL=IP+NSTA+1
                                                                             CBRC 135
      IH=IL+N5TA+1
                                                                             CORE 136
      IN=IH+NSTA+1
                                                                             CERC 137
      IPO#1N+NSTA+1
                                                                             Ceso 123
      ILG=IPO+NSTEST
                                                                             CBRD 139
      IHO=ILO+NSTEST
                                                                             CHRO 140
      !THERP=IHO+NSTEST
                                                                             CHRC 141
      IST/=1
                                                                             CBRO 142
      IEST=JSTA+NSTA+1
                                                                             CBRO 143
      ILOC#IZST+NSTEST
                                                                             CPPO 154
      IENVI=1
                                                                             C080 145
      IdNV2=1ENV1+3*(NSTA+1)
                                                                             CBRD 146
      I = NV3=IENV2+3+(NSTA+1)
                                                                             CBSC 147
      ISUM2=1
                                                                             CORO 148
      ITTL=1SUM2+ND1W
                                                                             CBSC 149
      IDELTA=ITTL+NDIM
                                                                             CBRD 150
      15161=1
                                                                             CBRO 151
      15162=9 #N5TEST+151G1
                                                                             CURU 132
      15163=9#NSTEST415162
                                                                            CDRO 153
      ISIC4=9*NSTEST+ISIG3
                                                                             CBRC 154
      1SIG5=6#NSTEST+ISIG4
                                                                             CBRC 155
      IXFIT=1
                                                                             CBRO 156
      IFCT=IXFIT+6#NEGNMX*MAXSAT
                                                                             CURO 157
      ISTNOS=3*NCScST+1
                                                                            CBRO 159
      151XY2=1
                                                                             CBRC 159
      ISTXYO=ISTXYZ+3#(NSTA+1)
                                                                            CBRO 150
      IXI=L
                                         REPRODUCIBILITY OF THE
                                                                             CBRO 161
      IPXPX0=1XI+b
                                                                             CBRO 152
                                          ORIGINAL PAGE IS POOR
      IAREA=1
                                                                             CBRO 163
      ICENTR=IAREA+4*NDEN
                                                                             CORC 166
      IBCENTHICENTRA 12*NOBN
                                                                             CARC 165
      IDENSU=18CENT+2*NOEF.ST
                                                                             CFR0 156
      IDENS2=IDENSOINTICST
                                                                             CORC 167
```

```
CBRD 158
    . IDSIG=IDENSO+NTIDEN+NCONST
                                                                            CORD 159
      TSCIF4+01801=501801
                                                                            CBRO 170
     - 1d Stak ≈ L
                                                                            CERC 171
     IMSUM=10SUM+NSTAT*MAXSAT*LBASE*16
                                                                            CBRO 172
      ILSUM=IMSUM FNSTAT #MAXSAT #LBASE #6
                                                                            CBRO 173
      I=AMT6I
                                                                            CHRC 174
      18TAC=10TAA+++NOIM+NEBIAS
                                                                            CHRO 175
      IBTAU=18TAU+4+NESIAS
                                                                            CHRO 176
      IBTIME=IBTNB+44NEBIAS
                                                                            CBRO 377
      19ESTA=IBTIME+2#NEEIAS
                                                                             CBRC 178
      IBETYP=1655TA+NEGIAS
                                                                            CBRG 179
      INUMBREIBET, YP +NEBIAS
                                                                             CBRD 180
      NCLEAR=INUMER + NEE IAS-1
                                                                             CBRO 131
      IF(NEUIAS.GT.O) CALL CLEARS(EBIAS.NCLEAR.I)
                                                                             CBRO 133
      NPARM=NEUNMX+6
                                                                             CBRO 183
      NSTAL=NSTA+1
                                                                             CBRO 186
      MSTART=NDIM-NWAST # 3-NGPCOM-NTIDEN
C INITIALIZE SUBRUUTINES USING VARIABLE STORAGE ASPAYS
                                                                             CBRO 135
                                                                             CBRO 136
      CALL DATRO1(LETAS, IBTAS, SUMI, INDICS, SUM2, EBTAS(THESTA))
      CALL SQANTI (PLFN(IH), XYZSIG(ISIG3), XYZSIG(ISIG2), XYZ(ISTXYZ),
                                                                             CBRO 137
         ENV(TENVI).ENV(TENVZ).ENV(TENV3).PLHV(TTHPRM).PLHN(TP).
                                                                             CBRO 188
                                                                             CORD 189
         FLHN(IL), ISTANO)
C LOAD COMMON PARAMETER INFORMATION INTO VARIABLE STURAGE ARRAYS
                                                                             CHRO 190
      CALL CUMPAR(IEIAS(ICI).IBIAS(IC2).IBIAS(IC3).BBIAS(IBCI).
                                                                             CBRO 191
         FLHN(IP), PLHN(IL), PLHN(IF), PEHR(IN), PEHR(IPO), PEHR(ILO),
                                                                             C380 172
                                                                             C880 123
         PLHN(1H0). ISTANG(ISTA). ISTANG(IEST). IND XCG. SUM2(ITTL).
                                                                             CBRO 194
         XYZSIG(18163).XYZSIG(18162).XYZSIG(18161).XYZSIG(18164).
                                                                             CBRO 195
         XYZSIG(ISIGE).XYZ(ISTXYZ).XYZ(ISTXYO).INDXC3(ISTNJS).
                                                                             CBRU 196
          (SCEED JACE LEGIT DENSE (IDSIGE), CENSE (IDENSE), BULAS (1802),
                                                                             CDRG 197
         DENSE(TAREAT, DENSE(TOENTR), DENSE(TBCENT))
                                                                             CbRG 198
C LOAD ARC PARAMETER INFORMATION INTO VARIABLE STURAGE ARRAYS
                                                                             CBRO 199
      CALL ARCPAR(1E1AS(181), 181AS(182), 181AS(183), 881AS(1881),
                                                                             CaRO 200
          181AS(164), 181AS(186), THIAS(165), 181AS(187), 181AS(1C1),
                                                                             CHRO 201
          IBIAS(IC2), 181AS(IC3), BBTAS(IBC1), INDXCS, EBIAS(IBESTA),
                                                                             CURO 202
         EBIAS(IBETYP), NEIASE, ISTANO)
C INITIALIZE REMAINING SUBROUTINES USING VARIABLE STORAGE ARRAYS
                                                                             CBRO 203
      CALL CUMADI(ISTANG(ISTA), ISTANC(IEST), ISTAND(ILDC), XYZ(ISTXXX),
                                                                             CBRO 204
          XYZ(ISTXYO), PUHN(IP), PUHN(IL), PUHN(IH), PUHN(IPO), PUHN(IUO),
                                                                             CBRO 205
          PLHN(IHO), FLHN(IN), XYZSIG(ISIG3), XYZSIG(ISIG3), XYZSIG(ISIG5),
                                                                             CBRO 206
         'XYZSIG(ISIG4).SUM1.INDXCS.BETAST/BC1).IBTAS(1C1).IBTAS(IC2))
                                                                             CBSD 207
      CALL DRAGI(GREAR)
                                                                             CBRO 202
      CALL ESTIMI(SUM1.SUM2(ISUM2).SUM2(IDELTA).XYZ(ISTXYZ).
                                                                             CBRO 209
          XYZ(ISTXYO), XYZSIG(ISIGI), BBIAS, IBIAS(IB3), IBIAS(IB4),
                                                                             CBBD 210
          ISTAND(ISTA). ISTANO(IEST). ISTAND(ILOC). IBIAS(IB7). PARNOS.
                                                                             CBRO 211
          INDXCS.DERSE(IDENSO).DERSE(IDSIG))
                                                                             CBRC 212
                                                                             C980 513
      CALL FI (GREAK)
                                                                             CBRO 214
      A=GRHRA1(ENV.NSTA1)
       A=DBSDT1(ENV(IENV1).ENV(IENV2).ENV(IENV3))
                                                                             CHRO 215
      CALL URBITI(XFIT(IFCT),XFIT(IXFIT),XI(IXI))
                                                                             C980 216
      CALL PREDCI(ENV(TENVI):ENV(TENV2):ENV(TENV3):PMPX0:X1(7):NPARM:
                                                                             CBPC 217
                                                                             CBRO 218
          NE CNMX 1
       CALL PROCSI(ISTAND(ISTA).XYZ(ISTXYZ),PLBR(IP),PLBN(IL))
                                                                             CBRO 219
       CALL RESPRICINEXCS, IDIAS(IC2), GRPAR)
                                                                             CBRO 220
       CALL STAIFI (KSLM.NSUM.NSTAT.MAXSAT.CSUM(ICSUM).CSUM(IMSUM).
                                                                             158 0900
                                                                             CERO 222
          LBASE, CSUN(ILSUM))
                                                                             CBRO 223
       IF (LUASE GT . O) LEASE = NSTA
```

			•	
	. CALL TWUSTI (FMFXO, NPARM)	,	CBRO	224
	CALL SURUNI (BETAS (TUD2) + DENSE (TAREA)	.DENSE(ICENTR), GRPAR, DE	NCON) CBPO	225
	CALL PDEN2 (DENSE(IPCENT), DENSE (IARE A).DEMSE(IDEMS2).	CRBD	226
	% 351A5(18D2),DENSE(1D51G2),SUM1,DE	NCCN (GRPAR)	C BR0	227
	CALL TRUEPI (XYZ)		C BRD	. 22 h
	CALL DSCMP1 (LETAS(TBTWA), EBTAS(TBTWC	O.ESIAS(IBTWB).EBIAS(IB	TIME). CBRO	556
	• SUMI, SUMZ, NETASE, EBTAS(1985TA), EE	TAS(INUMBR), EBIAS(IBETY	P) • CERO	230
	• FARNUS)		C BRC	231
	CALL VEVALI (GREAR)		° с вяо	232
	CALL CLEAR (CUSLAM, 66,2)	·	C BRO	233
	COSLAM(2)=1.000		CERO	236
¢	C CALL NONAME AND PERFORM JOB PRIME FUNCTION	SNO	CBRO	235
	CALL NOMAME (NPARM, PMPXO, 181A5(187), 1	BIAS(183+12),BBIAS.[BIA	S(IB4),CBRQ	236
	• 101AS(181), 1B1AS(182), 1B1AS(185),	19145(186),PARNUS,	CBPO	237
	SUM2(ISUM2),SUM2(ITTL),SUM2(IDELT.	A),1NDXCS(ISTNOS).	CBRD	238
	• ISTANU(ISTA).PLFN(IN).SUM1.INDXCS	#881AS(18C1) . 18 [AS(1C1)	 CBRO 	239
	 IBIAS(IC2), IBIAS(IC3), DENSE (IARE A) +DENSE(1CENTR) +DENCON+	CBRO	240
	• EBIAS(IGESTA), EBIAS(IGETYP))		CBRO	391
	RETURN	1	. с вяо	242
	END	•	CHRO	283





CHAD

```
CALL CHARLY(NCORE. ICORE. $1050)
 CALLING SEQUENCE
                     DESCRIPTION
    SYMBOL
             TYPE
                     NUMBER OF APRAYS FOR WHICH CORE IS TO BE ALLOCATED
   NORE
                     SIZES IN BYTES OF ARRAYS TO RE ALLOCATED CORE
     ICOSE.
              1 44
     (NCORE)
                     RETURN LABEL - RETURN TO THIS NUMBER IF
              1 = 4
     £1050
                                      INSUFFICIENT CORE IS AVAILABLE
  SUBROUTINES USED
                     MONE
  COMMON BLOCKS
                     NONE
  INPUT FILES
                      NONE
  DUTPUT FILES
                      NONE
                                                                               CHAP
CHARLY START D
* STORE OFF REGISTERS
       BC
             15,12(15)
                                                                                CHAP
              X171
                                                                                      30
       DC
              CL75CHARLY 5
                                                                               CHAP
                                                                                      3.1
       DC.
                                                                               CHAR
              12.12.12(13)
                                                                                      32
       STIL
                                                                               CHVD
                                                                                      33
             12.0
       BALR
                                                                               CHAB
       USING PAIR
                                                                                      ግ ሲ
                                                                               CHVD
                                                                                      75
* SET UP SAVE APEA CHAIN
                                                                                CHA⊇
                                                                                      3.5
       LR
              10.13
                                                                                CHAR
                                                                                      37
              13.APEA
       LA
              18.8(0.10)
                                                                                CHAD
                                                                                      3.8
       ST
              10.4(0.13)
                                                                                CHAR
                                                                                      39
       ST
       BC
              15.FIRST
                                                                                CHAR
                                                                                      4.0
              :35
                                                                                CHAR
AREA
       DS.
                                                                                      4 1
* LOAD REGISTER 2 WITH THE NUMBER OF ARRAYS
                                                                                CHAP
                                                                                      42
                                                                                CHAR
                                                                                      43
FIRST
       L
              2.0(1)
                                                                               CHAP
                                                                                      44
              2,0(2)
       L
* LOAD REGISTER 3 WITH THE ADDRESS OF BYTE COUNT ARRAY
                                                                                CHYD
                                                                                      45
                                                                                CHAD
                                                                                      46
       L
              3.4(1)
* CONSTRUCT BYEE COUNT LIST FOR GETMAIN
                                                                                CHAR
                                                                                      ۸7
        52
              6.5
                                                                                CHYD
                                                                                       4 4
        56
                                                                                CHAR
                                                                                      40
              6.5
                                                                                       50
LOCE
        ST
              5.LIST(6)
                                                                                CHAP
                                                                                CHAD
        L
              7.0(31
                                                                                       51
              7.6151(6)
        ST
                                                                                CHAD
                                                                                       52
        L۸
              6.4(5)
                                                                                CHVB
                                                                                       53
        LA
              3,4(3)
                                                                                CHAD.
                                                                                       54
```

TO ALLOCATE CORE FOR VARIABLE STORAGE ARRAYS

PURPOSE

DCT

2.1.000

	TC	9.=X*80*	CHAR	5 <i>6</i>
	STC.	9.LIST-4(6)	CHAR	57
# ISSU		EST FOR STORAGE	CHYD	≂ A
	GETMA	IN LC.LA=LIST. A=ADDR	CHAD	F 0
	STC	9, ADDR-4(5)	CHAR	60
◆ RETU	RN IF	INSUFFICIENT STORAGE AVAILABLE	CHAR	۴1
	NR	13.15	CHYB	5.2
	3 C	1, aet	CHVS	, E 3
* CALL	CBROA	N .	CHAD	6 4
	LA	1.ADDP	CHAR	65
	ST	1+LADDR	CHAR	66
	LA	1+LADDR	CHAP	67
	L.	15. ADCON	CHVo	K٩
-	BALR	14+15	CHV &	. Ed
* REST	ORE RE	GISTER AND RETURN	CHAR	7^
	SR	15.15	- CHAP	71
PET	L	13 + AREA+4	CHAR	72
÷	Ги	2.12.28(13)	CHYO	7.3
,	L'.	14,12(13)	CHAP	74
•	4VI	12(13), X*FF*	CHAD	75
	BCR	15.14	CHAD	75
AD CON	DC	V(CBROWN)	CHAR	77
LIST	ÐS	30 m	CHYS	7 ª
LACOR	DS	F	CHVD	70
₩ D DR	DS	30 F	CHVD	€ ≎
	END.		CHV&	9.1

CLEA

CLEA

CLEA

CLEA

31

32

33

TO SET AN ARRAY TO ZERO PURPOSE CALLING SEQUENCE CALL CLEAR(IA+N+K) SYMBOL TYPE DESCRIPTION OUTPUT - ARRAY TO BE CLEARED (1) INPUT - FIRST DIMENSION OF ARRAY INPUT - SECOND DIMENSION OF ARRAY SUBROUTINES USED NONE . CEMMON BLUCKS NONE INPUT FILES NONE JUTPUT FILES NONE CLEA SUBROUTINE CLEAR (TAINIK) CLEA DIMENSION TA(1) J=N+K CLEA C CLEAR THE ARRAY

CLEÁR

DD 10 1=1.J

RETURN

1C 1A(1)=0

NAME CLEAR2 TO SET AN APRAY TO ZERO PURPOSE CALLING SEGUENCE CALL CLEAR2 (IA.K.L.) DESCRIPTION SYMBOL OUTPUT - ARRAY TO BE CLEARED IΑ INPUT - FIRST DIMENSION OF ARRAY Κ INPUT - SECOND DIMENSION OF ARRAY SUBROUTINES USED NONE CEMMON BLOCKS NONE INPUT FILES NONE HONE OUTPUT FILES

SUBROUTINE CLEAR2(IA.K.L)
INTEGER = 2 IA(1)
J=K*L
C CLEAR THE ARRAY
CO 10 I=1.J
10 IA(1)=C
RETURN

END

COEF

DESCRIPTION

COEF computes the set of interpolation coefficients needed based on the order of the interpolation and the distance in units of stepsizes from the most recent time point in the array of back values.

```
COSF
                  TO COMPUTE INTERPOLATOR CUEFFICIENTS
PURPUSE --
                  CALL COEF(S, ICRDER, A, AS)
CALLING SEQUENCE
                  DESCRIPTION
  SYMJUL
           TYFE
                  INPUT - INTERVAL DISTANCE
           DF -
                  INPUT - CRDEP
   TORDER
                  DUTPUT - POSITION COEFFICIENT VECTOR
   (1)
   AS
           DΡ
                  OUTPUT - VELOCITY COMPRISHED VACTOR
   (1)
SUERCUTINES USED
                  COM
CCMMEN BLUCKS
                  INTERP
INFUT FILLS
                  NONE
CUTPUT FILES
                  NONE
PEFERENCES
                  GSEC X-553-70-372
                   "GEOSTAR-II A GEOPOTENTIAL AND STATION POSITION
                   RECOVERY SYSTEM!, C. E. VELEZ, G. P. SRODSKY
                                                    JCTURER 1970
```

	SUBRUUTING COEF(S. TORDER.	(AS)	+ c os#	35
	IMPLICIT REAL*9 (A-H+O-Z)		COE#	35
	COMMONZINTERPZCOVB(21,21),	(12(4)	CDEF	77
	CATH MAXC/15/	·	· COEF	35
	DATA ICE2/0/	•	COEF	39
	CINENSION BPZ(21). PPPZ(21).	9P(22), 3PP(23), 3(23), 4(1), AS(1)	COSF	40
	1F (10L2+N:+0160 TO 900		COEF	6.1
	CALL CEM(20)	•, •	COEF	42
`c	INITIALIZE	·	COEF	43
-	£(1)=1.0C		COTE	6.6
	EPZ(1)=1.00		COEF	45
	£PPZ(1)=1.00	•	COSE	46
	=P(1)=1+0C	THE TOTAL OF THE	COSF	47
	HPP(1)=1+00	REPRODUCIBILITY OF THE	CUEF	4.6
	DU 10 1=2,94XC	ORIGINAL PAGE IS POOR	COES	6.0
	IL 1= I+1	ORIGINAL	COEF	£o
	5U.1= J. C.		COEF	51
	ರವ ∻ ∟=1 +1€1		COEF	52
	. SUM=SUM=ERZ(L)/DFLOAT(1-L+1	•	COEF	53
	10 GPZ(1)=SC#	•	C OEF	54
	LO 20 1=2,4470		COEF	-
		•	2,72,	

			COEF	56
	•	SUM=0.CO	COEF	57
		DO 19 L=1+1	COZE	50
		SUM=SUM+EFZ(L)*BPZ(I-L+1)	COSF	59
		υΡΡΖ(I)=SLM	COSF	50
Ç	_	INITIALIZATION	COEF	61
	300	IULI=ICKCcR-1	COEF	62
		IOLZ=ICRCER+2	COEF	53
		LO 30 1=2.10RDFR	COEF	64
	20	<pre>b(1)=b(1-1)*(DFLOAT(2-1)-S)/DFLOAT(1-1)</pre>	COEF	55
		OU 40 I=2 ACROER		6.6
		SUM=0.00	COEF	67
		00 39 L=1.1	COEF	63
	39	SUM=SUM+EFZ(L)*B(I-L+1)	COSF	
	40	EP(1)=SUM .	COEF	69
		DU 50 I=2.ICRCER	COEF	70
		SUM= 0. D0	COEF	71
	-	BU 49 L=1+1	COEF	72
	4.9	SUM=SUM+: FPZ(L)*8(I-L+1)	COEF	73
	50	EPP(I)=SUR	COSF	74
		FACT=1.DU	COSF	75
		DJ 100 1=1.ICL2 .	COEF	76
		SUM=0 , DO	COEF	77
		00 80 L=1.ICL2	CUEF	78
	80	SUM=SUM+FACT*COMB(L+1)*BPP(L+2)	COEF	79
		A(1)=SUM	COEF	30
	100	FACT == FACT	COEF	81
		FACT=1.00	COFF	32
	-	00 110 I=1,ioti	COEL	ŖŖ
		SUM=0 • D0	COLF	84
		00 105 L=1.10L1	COEF	85
	103	SUM=SUM+F/CT*COM6(E.1)*8P(E+1)	COSE	86
		A3(1)=SUN	COSF	17
	110	FACT=-FACT	COSE	ខន
		K_TUNN	COFF	39
		END	COSH	50

COEFL NAME TO LIST NON-ZERO GRAVITY MUDEL COEFFICIENTS OF THE PURPOSE SPHERICAL HARMONIC EXPANSION OF THE GEOPOTENTIAL CALLING SEQUENCE CALL COEFL(IUN:T.NORMAL) DESCRIPTION SYMBOL TYPE INPUT - PRINTER FILE NUMBER IUNIT INPUT - SWITCH INDICATING NURMALIZED COEFFICIENTS NORMAL APE DESTRED SUBROUTINES USED DENORM COMMON BLOCKS FMODEL INFUT FILES ENDN OUTPUT FILES BACK

	SUBROUTINE COLFE (IUNIT, NORMAL)	CDEF	25
•	IMPLICIT REALISCA-H, 0-2)	COSE	77
•	LUGICAL NORMAL	COEF	25
	REAL*a CS	こうぎに	20
	CUMMINANT MCDEL /INDEX1. NDEX2. INDEX3. INDEX4. C5(30.33) . MDDEL(8)	CDEF	30
	LIMENSION DUTI(5), OUT2(3), IND1(5), IND2(5)	CDEF	31
	REAL*6 MCDEL	COEF	32
, .	EATA (CO.CC1/1F0.1H1/	CDEF	33
	WRITE(IUNIT,100) MODEL	` c n∈≓	37
e we	THE BUT ZUNALS	CDEF	35
CHP	150	COEF	36
	00 10 N=3,1NCEX1	COSS	37
	NC=N-1	¢⊃€≓	33
	IF(CS(NC.1).EC.0.000) GC TO 10	COEF	39
•	1=1+1	COF=	40
	LUT1(1)=(\$(NC.1)	CDF=	41
	IF(NURMAL) SUTI(I)=OUTI(I)/DENCRM(NC+0)	COE=	42
	INDI(1)=NC	COEF	43
	•	COE=	2.2.
	IN32(I)=C If(I+LT+5) GDTO 10	COF-	45
		COEF	6.5
	1=0 - %RIT=(1UNIT+102) (1ND1(J)+IND2(J)+DUT1(J)+J=1+5)	co:=	4-
		COEF	43
10	CONTINUE (I.):TUO, (I.):CONT. (I.):TROUT (I.):TELPALO, TO. ITO (I.	COSF	٠, ح
	ITE SECTUATIONS & TESSERALS	೧೦೭೯	50
C MH		COEF	51
	LINES=0	COEF	52
	1=0	COEF	63
	CC=CCO	COEF	56
	00 20 N=3.1NDEX1	EUET)	F.5
•	NC=N-1		, ~

	·		
	NS=32-N	COSE	56
	MAXU#MINO(INDEX3,N)	COEF	57
	Du 20 M=2.MAXC	COSE	53
		COEF	59
	WT=M-1	COEF	60
•	IF(CS(NC.N).EG.0.D0.AND.CS(NS.NS).EQ.0.E0) GD TO 20	COFF	51
	I=I+1	COSE	€2
	ANGRIH = 1 + C C	COFF	63
	IF(NORMAL) ANDRM=1.DO/DENCRM(NC.MT)	COSE	ó۵
	GUT1(1)=(S(NC+M)#ANGRM	COEF	55
		COEF	65
		ÇGEF	57
		COEF	63
	IF(1-LT-3) GOTO 20	COEF	60
	IF(MDD(LINES, 30), FO.0) WRITE(ILNIT, 1037 CC	COEF	70
	IF(WOD(LINES.5).50.0) WRITE(IUNIT.101)	COEF	71
	1=0	COEF	72
		COEF	73
	LINES=LINES+1	CHES	76
		COEF	75
20 .	CONTINUE	COEF	76
20	IF([.GT.0] WRITE([UNIT.104) ([ND1(J).IND2(J).DUT1(J).DUT2(J).J=1.I)	COSE	77
	RETURN	ሮጋ፤ ፡፡	78
100		COEF	70
100		COEF	ዞዕ
		COEF	81
101	FORMAT(1X)	COEF	82
		COFF	Ď.
102		COSE	ዓሩ
105	1x.9(1F-)//6x.3(5HINDEX.13X.	COSE	35
•	5+VALUE, 15X) /7X +3{4HN M +5X +1HC +13X +1HS +11X}}	COEF	ء 6
103	FORMAT (1F ,5X,3(12,13,2X,1PE12,5,3X,1PE12,5,4X))	COEF	97
104	END .	COEF	38
			_

C 3 M

COM

CJM

COM

¢a#

CCM

COM

00%

PCO

MCÇ

CJM

CJM

COM

MCO

22

23.

2#

25

26

27

28

29

30

31

32

33

34

3.5

TO COMPUTE BINE TIAL COEFFICIENTS PURPOSE CALLING SEQUENCE CALL COM(M) DESCRIPTION TYPE SYMBOL INPUT - NUMBER OF COEFFICIENTS 1 -SUBROUTINES USED NONE INTERP CENHON BLOCKS INPUT FILES NONE NONE OUTPUT FILES SUBROUTINE COM(M) IMPLICIT RESLAS (A-H.O-Z) (A) MUDN/(15.15) ONGRETATINGUM(A)

COM

SHAN

. M1=M+1

DG 10 [#1.41

C(1-11=1.00

C(1.1)=1.00

CU 5 J=2.11 ·

11=1-1

10 CUNT INUE

ENJ

RETURN

1F(1.LE.2) GO TO 10

. 5 C(1.J)=C(1-1.J)+C(1-1.J-1)

COMADJ NAME PURPOSE ENTRY POINT INITIALIZATION CEMADI TO PRINT ADJUSTMENTS TO COMMON PARAMETERS CEMADJ CALLING SEQUENCE CALL COMADICISTAND. ESTAND. LOC. STAXYZ, STXYZO, RLAT. . RLON . H. RLATO . FLONO . HO . NAME . PSIG. PLHS 1G . XY ZNOM . PEHNCM . SUM1 . INDXCS . GPVAL, GPVALO, GPSIG) TYPE DESCRIPTION SYMBUL INPUT - STATION NUMBERS ISTAND (1) INPUT - MASTER STATION NUMBERS FOR ESTIMATED ESTANO STATIONS (1) SCRATCH LCC 1 * 2 INPUT & OUTPUT - CURRENT BEST STATION COORDINATES STAXYZ (3.1) INPUT - A PRIMPI STATION POSITIONS STXYZO (3.1) INPUT - STATION LATITUDES IN PADIANS DF RLAT (1) INPUT - STATION LONGITUDES IR RADIANS KLUN (1) INPUT - STATION FEIGHT IN METERS DF (1) INPUT - A PRICRI STATION LATITUDE IN RADIANS ្រ RLATO (3) INPUT - A PRIORI STATION LONGITUDE IN RADIANS ΣF 041UJR (1) INPUT - A PRICRI STATION HEIGHT IN METERS DF. H0 (1) REPRODUCIBILITY OF THE INPUT - STATION NAMES OP NAME ORIGINAL PAGE IS POOR (1) DUTPUT - STATION COVARIANCES FSIU (3,3,1) INPUT & CUTPUT - STATISH SPHERICAL COORDINATE PLHSIG CONVABIANCES (3.3.1)

25

99

100

101

AMCO

COMA 102

COMA 103

COMA TOA

COMA 105

COMA 100

COMA 197 CO4A 103

CD3A 109

COMA 110

COMA 111

XYZNUM R	INPUT -		GMAS AND CORR		
PEHNOM R	INPUT -		GMAS AND COFR STATION CODRE		
SUM1 OP (1)	INPUT -	INVERTED L	EAST SQUARES	MATRIX IN VECTO	R .
INDXCS 1#2 (3.1)	INPUT -	INDICES OF	ADJUSTED GEO	POTENTIAL	
GPVAL DF	INPUT -	CURRENT VA		STED GENPUTENTIA	L
GEVALO DE			ALUES FOR ADJ AL COEFFICIEN		
GPSIG OF	INPUT -	SIGMAS FOR PARAMETERS	ADJUSTED GET	OPOTENTIAL .	
CAULING SEQUENCE	CALL CO	(ABTUO) LDAN			
SYMBOL TYPE	rescrip:	TICN			
OUTER I	INPUT -	CUTER ITER	ATION NUMBER		•
SUBROUTINES USED	PDEN	SQUANT	CARTUO	NUMLOC	•
CEMMEN BEOCKS	CONSTS	CPARAM	FNODEL	TPEBLK	
INFUT FILES	NONE		•	,	
OUTPUT FILES	OUTP -	PRINTER	REPRODUCIBII ORIGINAL PA	LITY OF THE GE IS POOR	
	;		•		
	.0.H0.NAY. E1:GRS1G .+E (A-H.	E.PSIG.PLHS)		TXYZO.REAT.REON. HNOM.SUMI.INDXCS	
INTEGER#2 IST	AND, ESTA	NO.LEC.INEX	C S	•	APEQ + .

INTEGER CUTTER + DASH + GUTP + DATP

COURSE PRECISION NAME INCOLU

GPS13(1):1(5(2)

REAL PUHNIMAXYZNOMAPSICASIGAPLESIG

CUMMON/SCASIS/CPI,CTWOPI,CRAD, FRSEC

DIMENSION [APRAY(3).SDEV(3).COFI(3).SIG(3.3).SUMI(1).ISTAND(1).

MENTO(21, REDNO(1), HC(1), NA 45(1), PSIG(3, 3, 1), PEHSIG(3, 3, 1),

XYZNCM(A, 1), PEHH, CM(A, 1), INDXCS(3, 1), GPVAL(I), SPVALO(1),

CLANUNZCPANAMZNSTA.NMAST.NSTEST.NDIA.MSIASINGPCI.NGPC2.NGPCOM.

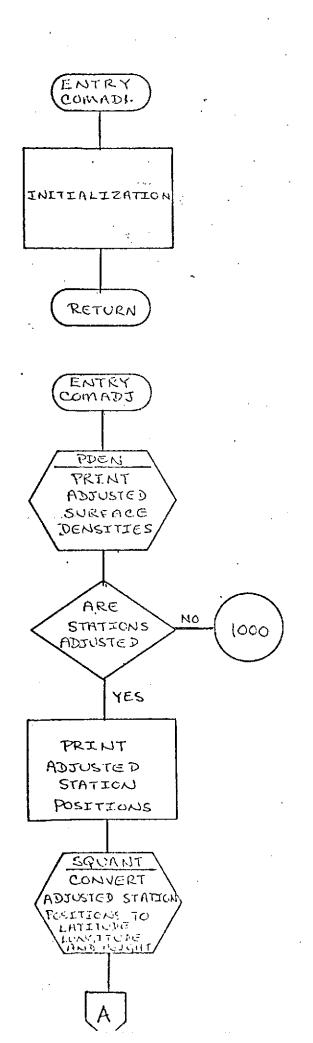
NOSEGTACMPROPALLEMIALIMZAKJENANDJANTANTIOSTAMTICENAINNRSWA

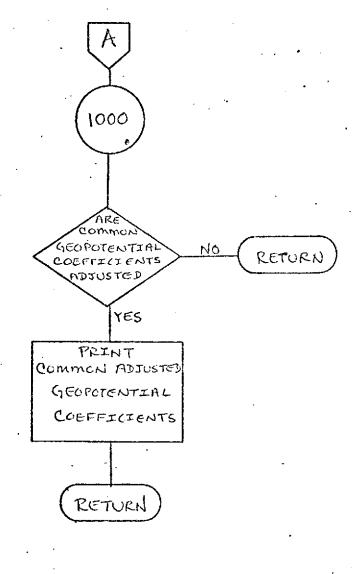
ESTANG(1), LOC(1), STAXY2(3,1), STXY20(3,1), REAT(1), RECN(1), H(1),

NCONSTRUCTS		
NCDMST-NDCCNS		COME 112
COMMON/FERDEL/INDIVACE).CS (30.33).MJOBEL (8) COMMON/FERDEL/INDIVACED (DETECT) COMMON/FERDEL/INDIVACED (DETECT) COMMON (11 PROJECT) (COMMON	COMPANS ADDING	
COMMONITERMENTIAL COUNTY APRILIDATION AND PRIGRIZADJUST/DHADJUSTEDY CATA 162/16(-1957) RETURN ENTRY COMADJICUTER) COMA 110 CATA 100/1516 SURFACE SENSITIES COMA 120 CATA 120 CATA 120 CATA 120 CATA 121 CATA 121 CATA 121 CATA 121 CATA 122 CATA 122 CATA 123 CATA 123 CATA 123 CATA 124 CATA 125 CATA 125 CATA 126 CATA	NOUNSTANDER (15) TX (4) -CS (30,32) -M JOEL (8)	
EATA 164/16/1957 EATA 164/1957 E	CHAMBERT TO THE CUITPED ALP(10)	
INDEXNOCLION INDE	COMMON THE CONSTITUTION APRIOPISHA PRICRIMADJUST ADJUST AD	
NONE NOT NOT NOT NOT NOT	CATA TOURS THE STATE OF THE STA	
ENTRY CCMADICUTER) C PRINT ADJUSTEC SURFACE SENSITIES C PRINT ADJUSTEC SURFACE SENSITIES C PRINT ADJUSTEC SURFACE SENSITIES C PRINT ADJUSTEC STATION POSITIONS C PRINT ADJUST ADJUST AND THE COUNT ADJUST AND C PRINT AD	tara 103/104/1-1)-(1+(1-1))/2	
C PRINT ADJUSTES SURFACE SENSITIES C PRINT ADJUSTES SURFACE SENSITIES C PRINT ADJUSTES SURFACE SENSITIES C COMA 122		
C PRINT ADJUSTEC SURFACE DENSITIES IF (NO ENDIAGREC) CALL POPONOUTE) (COMA 122 NSTART = NEIM-34NNAST = NGCOR-NTICEN+1 (COMA 123 IF (NSTATE = NEIM-34NNAST = NGCOR-NTICEN+1 (COMA 127 IF (NSTATE = NEIM-34NNAST = NGCOR-NTICEN+1 (COMA 127 IF (NSTATE = NEIM-34NNAST = NGCOR-NTICEN+1 (COMA 127 COMA 126 (COMA 127 COMA 126 (COMA 127 COMA 127 (COMA 127 (C		
IF (NAD 1.15T.E.) CALL NOTEST COMA 123 IF (NAT = NLT = 1.25 NAM = 1.00	- BEINT ON BETHE SURFACE BENSITIES	
NSTARTENCIA-34NVAST-NOTEST, COMA 123 IF(NSTASILET, O) GD TO 1000 COMA 125 COMA 127 COMA 127 COMA 127 COMA 127 COMA 128 COMA 127 COMA 128 COMA 127 COMA 129 COMA 130 IZ=IAKXAC(ISTI+IST COMA 131 ISIG(I, J)=SUM1(IZ) IF(SUM1(IZ)+LIT-C-OSO) WEITE(OUTP, 3020) J.L. COMA 132 SCLV(J)=CSONT(DASS(SUM1(IZ))) COMA 134 SCLV(J)=CSONT(DASS(SUM1(IZ))) COMA 135 IZ=IAKARA(I) ISIG(I, Z)=SUM1(IZ+I) SIG(I, Z)=SUM1(IZ+I) SIG(I, Z)=SUM1(IZ+I) SIG(I, Z)=SUM1(IZ+I) COMA 127 COMA 128 SIG(I, Z)=SUM1(IZ+I) COMA 129 COMA 129 COMA 129 COMA 129 COMA 129 COMA 120 ACTION AND TRACTACT CALL POST (ACTION)		
TF(NSTESTALE-0) GD TO 1000	NSTARTENE IM-34NVAST-NGFCOM-NTICEN+1	
C PRINT ADJUSTED STATION POSITIONS LINESSO INSTACO INSTACO INSTACO ISTENDING-SAMMAST+1 DC 400 Lel.NAMST DU 100 Jel.3 IZELNEXNC(IST)+IST SIG(J.J)+SUMI(IZ) IARRAY(J)1212 IF(SUMI(IZ)+LT.C.O.D.D) WRITE(DUID, 3020) J.L COMA 133 SUC, (J)+SUSTIORAS(SUMI(IZ))) COMA 134 SUC, (J)+SUSTIORAS(SUMI(IZ))) COMA 135 SIG(J.J)+SUMI(IZ)+I) COMA 136 COMA 137 COMA 137 COMA 138 SIG(J.J)+SUMI(IZ)+I) COMA 137 COMA 138 SIG(J.J)+SUMI(IZ)+I) COMA 138 SIG(J.J)+SUMI(IZ)+I) COMA 139 COMA 149 COMA 139 COMA 149 COMA 139 COMA 149 COMA 139 COMA 149 COMA 150	THEN STANTALESO) GO TO 1000	
LINES=0	C DE INT ADJUSTED STATION POSITIONS	COMA 125
INSTA=0	11NES=0	
IST=NDLH=ANNAST+ DG 400 L=1:NMAST COMA 129 DG 400 L=1:NMAST COMA 130 IZ=INXNC(IST)+IST COMA 131 IZ=INXNC(IST)+IST COMA 132 IARRAY(J)=12 COMA 132 IARRAY(J)=12 COMA 132 DG 400 L=1:NMAST COMA 132 IARRAY(J)=12 COMA 132 IARRAY(J)=12 COMA 132 IARRAY(J)=12 COMA 132 SGLV(J)=ESOPTIDABS(SUM1(IZ))) COMA 132 SGLV(J)=ESOPTIDABS(SUM1(IZ))) COMA 135 IZ=IARRAY(I) COMA 135 IZ=IARRAY(I) COMA 135 IZ=IARRAY(I) COMA 135 IZ=IARRAY(I) COMA 135 SIG(I, 2)=ESUM1(IZ) COMA 135 SIG(I, 2)=ESUM1(IZ) COMA 135 SIG(I, 2)=ESUM1(IZ) COMA 145 SIG(Z, 1)=ESG(I, 2) COMA 145 SIG(Z, 1)=ESG(I, 2) COMA 145 SIG(Z, 1)=ESG(I, 2) COMA 145 COMA 145 COMA 145 COMA 146 COMA 146 COMA 147 COMA 148 COMA 148 COMA 148 COMA 149 COMA 149 COMA 149 COM		
DC 400 L=1.NMAST	15T=ND1M-3*NMAST+1	
U 100 J=1.3	DG 400 L=1.NMAST	
I2=INXXNC(IST)+IST	ეცე 100 J=1∙3	
SIG(1, J) = SUMI(12)	12=1 NUXNC (1ST)+1ST	
IARRAY(J)=12	S1G(J, J) = SUM1(12)	
SGLV(J)=DSDT(DASS(SUNT(12)) 100 IST=IST+1	4 - 1 - 1 0	
SGLV(J)=DSDT(DASS(SUNT(12)) 100 IST=IST+1	1F(SUM1(12).LT.0.000) WRITE(00 15.3020) 542	
12=1AkA7(1)	SCLV(J)=CSQPT(DABS(SUM1(12)))	
13=1ARHAY(2)	100 IST=15T+1	
SIG(1,2)=SUM(1(2+1))		
SIG(1.2)=SUM(1(3+1) CCMA 140 SIG(2.3)=SUM(1(3+1) CCMA 141 SIG(2.1)=SIG(1.2) COMA 142 SIG(3.1)=SIG(1.3) COMA 143 SIG(3.1)=SIG(1.3) COMA 143 SIG(3.1)=SIG(1.3) COMA 144 SIG(3.1)=SIG(1.3) COMA 145 SIG(3.1)=SIG(1.3) COMA 145 SIG(3.1)=SIG(1.3) COMA 145 COMI(1)=SUM(1(2+2)/(SDEV(1)*SDEV(3)) COMA 145 COMI(2)=SUM(1(3+1)/(SDEV(2)*SDEV(3)) COMA 145 COMI(3)=SUM(1(3+1)/(SDEV(2)*SDEV(3)) COMA 145 COMA 145 COMA 145 COMA 147 COMA 148 COMA 148 COMA 149 COMA 149 COMA 149 COM	13=1AKHAY(2)	
SIG(2,3)=SUM1(13+1)	\$1G(1,2)=5U"1(12+1)	
SIG(2.1)=SIG(1.2)	SIG(1.0)=SUM1(12/0)	
SIG(3:1) = SIG(1:3) SIJ(3:2) = SIG(7:7) CONT (1) = SUMI (12+1) / (SDEV(1) * SDEV(2)) CONT (1) = SUMI (12+1) / (SDEV(1) * SDEV(3)) CONT (2) = SUMI (13+1) / (SDEV(1) * SDEV(3)) CONT (3) = SUMI (13+1) / (SDEV(2) * SDEV(3)) CONT (3) = SUMI (13+1) / (SDEV(2) * SDEV(3)) CONT (3) = SUMI (13+1) / (SDEV(2) * SDEV(3)) COMA 14: COMA 15: \$13(2,3)=\$UW1(13+1)		
SIJ(3,2)=EIG(2,3) COMA 145 COMA(1)=SUMI(12+1)/(SDEV(1)*SDEV(2)) COMA(2)=SUMI(12+2)/(SDEV(1)*SDEV(3)) COMA(3)=SUMI(13+1)/(SDEV(2)*SDEV(3)) COMA 145 COMA 150 COMA 150 COMA 150 COMA 150 COMA 151 IF(MJCULINES, 15), NC.1) CO TO 250 REPRODUCIBILITY OF THE COMA 151 COMA 152 COMA 153 COMA 153 COMA 154 RETECUTE, 3000 CUTER COMA 155 COMA 155 COMA 156 COMA 157 COMA 156 COMA 157 COMA 157 COMA 156 COMA 157 COMA 157 COMA 157 COMA 157 COMA 157 COMA 157 COMA 156 COMA 157 COMA 157 COMA 157 COMA 157 COMA 158 COMA 159 COMA 159 COMA 159 COMA 159 COMA 159 COMA 150 COMA 150 COMA 150 COMA 151 COMA 150 COMA 150 COMA 151 COMA 150 C	\$10(2.1)=\$16(1.2)	
CONT (1) = SUM1 (12+1)/(SDEV(1)*SDEV(2)) CUN1 (2) = SUM1 (12+2)/(SDEV(1)*SDEV(3)) CUR1 (3) = SUM1 (13+1)/(SDEV(2)*SDEV(3)) 200	\$16(3,1)=516(143)	
CURI (2) = SUMI (12+2)/(SDEV(2) * SDEV(3)) CURI (3) = SUMI (13+1)/(SDEV(2) * SDEV(3)) 200 INSTA = INSTA+1 NOCUN = NUMBER (INSTA, ESTANDINSTEST, LOC) IF (NUCUNI, EQ., O) GO TO 2CC CO 400 N = 1, NCCCN LINE S = LINES+1 IF (MULL (LINES, 15), NC.1) CO TO 250 REPRODUCIBILITY OF THE COMA 150 COMA 151 WRITE (OUTF, 300) CUTER REPRODUCIBILITY OF THE COMA 153 COMA 154 COMA 155 COMA 156 COMA 157 COMA 159 COMA 150 C	\$13(3;2)=\$10(2;2) 	
CORI (3) = SUMI (13+1)/(SOEV(2)*SOEV(3)) 200 INSTA = INSTA+1 NOCON=NUNLOC(INSTA, ESTAND, NSTEST, LOC) IF (NUCEN, EQ. 0) GD TO 2CC CO 400 K=1,NCCON LINES=LINES+1 IF (MULLINES, 15),NC. 1) CO TO 250 REPRODUCIBILITY OF THE COMA 153 WHITE (JUTF, 3000) CUTER WRITE (GUTF, 3010) 253 I = LOC(K) CO 300 J=1.3 CUMA 155 COMA 157 COMA 157 COMA 158 COMA 157 COMA 158 COMA 157 COMA 158 COMA 157 COMA 158 COMA 159 COMA 159 COMA 159 COMA 159 COMA 150 COMA 150 COMA 150 COMA 151 COMA 152 COMA 155 COMA 155 COMA 156 COMA 157 COMA 156 COMA 156 COMA 159 COMA 159 COMA 150	CORT(1)=50H1(12+1)/(50EV(1)+50EV(3))	
200 INSTA=INSTA+1 NDCDN=NUNLOC(INSTA+ESTAND+NSTEST+LDC) IF (NUCCH+ED+O) OD TO 200 CD 400 K=1+NCCCN LINES=LINES+1 IF (MUC (LINES+15)+NC+1) CD TO 250 REPRODUCIBILITY OF THE COMA 150 COMA 151 COMA 152 COMA 153 REPRODUCIBILITY OF THE COMA 153 COMA 153 COMA 155 COMA 156 COMA 157 COMA 156 COMA 157 COMA 156 COMA 156 COMA 157 COMA 156 COMA 156 COMA 157 COMA 156	CURT(27=26mT(12+1)/(SDEV(2)*SDEV(3))	
NOCON=NUMLOC(INSTA,ESTAND,NSTEST,L3C)		
IF(NUCUN.EG.O) GO TO 200 COM 150 COM 151 COM 151 LINES=LINES+1 IF(MUCULINES.15).NC.1) CO TO 250 REPRODUCIBILITY OF THE COM 153 COM 153 COM 153 COM 155 COM 156 COM 157 COM 156 COM 156 COM 157 COM 156 COM 156 COM 157 COM 156 COM 157 COM 156 COM 157 COM 156 COM 156 COM 157	200 INSTALLACTINSTALESTANDINSTALECT	
DO 400 N=1.NCCON LINES=LINES+1 COMA 151 COMA 152 COMA 152 COMA 153 COMA 153 COMA 154 COMA 155 COMA 157 COMA 157 COMA 158 COMA 159 COMA 159 COMA 159 COMA 159 COMA 159 COMA 159 COMA 150 COMA 15	**************************************	
######################################	on and relandican	
######################################	Line Set 1855+1 DEPRODUCIBILITY OF POOR	
######################################	TELMUL (LINES, 15) NO.1) CO TO 250 MILLION AT PAGE 18 POOLS	
######################################	WHITE (JUTE, 30CO) GUTER ORIGINAL	
253 I=LOC(K) CO 300 J=1.3 COMA 157 COMA 158 COMA 159 COMA 159 ANTE(CUTF.ACCO) ANTE(OUTF.3CO) APRICE.NAME(I).ISTANO(I).(STXYZO(J.I).J=1.3). COMA 159 COMA 159 COMA 159 COMA 150 COMA 151 COMA 151 COMA 151 COMA 152 COMA 153 COMA 153 COMA 153 COMA 153 COMA 155	WRITE(5019,3010)	
######################################		
DU DOU M=1.3 300 PSIG(J.M.1)=SIG(J.M) ARITE(CUTF.ACCO) WRITE(OUTF.30:20) APRICE.NAME(I), ISTANO(I), (STXYZO(J.I), J=1.3). (XYZRCM(J.I), J=1.6) ADJ WRITE(CUTF.30:20) ADJUST.NAME(I), ISTANO(I), (STXYZ(J.I), J=1.3). COMA 163 COMA 163 COMA 163 COMA 163 COMA 163 COMA 165	co 300 J=1.3	
######################################	for 300 M=1.3	, COMA 158
######################################	TOU FOIG(J.M.1)=SIG(J.M)	COMA 139
. (XYZRCK(J.1).J=1.6) 400 WRITI(CUIF.303C) ADJUST.NAME(I).ISTANO(I).(STAXYZ(J.1).J=1.3). COMA 163 COMA 164 CALL SCUANT(NETEST.NSTEST.AFALSC.) COMA 165 LINESKED FUNCH 305C.CUICO COMA 167	#RITE(CUIF,Δ0CO)	
. (XYZRCK(J.1).J=1.6) 400 WRITI(CUIF.303C) ADJUST.NAME(I).ISTANO(I).(STAXYZ(J.1).J=1.3). COMA 163 COMA 164 CALL SCUANT(NETEST.NSTEST.AFALSC.) COMA 165 LINESKED FUNCH 305C.CUICO COMA 167	WAITE(OUTF, 30 20) APRICE, NAME(1), 15 (ANDI), 17	
COMA 164 CHUL SCUANT(NETEST ** FALSE**) CIMA 165 LINESKED FUNCH 305C+CUTCP COMA 167	(xy7h(h(J+1)+J=1+6))	
COMA 164 CHUL SCUANT(NETEST ** FALSE**) CIMA 165 LINESKED FUNCH 305C+CUTCP COMA 167	400 WRITE(CUTE, 3030) ADJUST, NAME (171131 AND CTYTE	
LINESKED CCMA 155 FUNCH 305C+CUTCP COMA 157	· · · · · · · · · · · · · · · · · · ·	=
LINESKED CCMA 155 FUNCH 305C+CUTCP COMA 157	CALL SCUANT (NSTEDTANDIED) AN ALLENA	
FUNCH 3050-CUTUP COMA 167 COMA 167	LINESK#U	- ·
Co 300 lelates (* 5)	FUNCH BOSCACUTON	COMA 167
	CO 300 14147/3/751	

```
COMA 168
     LINESX#LINESX+1
                                                                            COMA 169
     DO 500 J=1.3
                                                                            COMA 179
 500 PLHSIG(J.J.1) = SCPT(PLHSIG(J.J.1))
                                                                            COMA 171
     EO 700 J=1.2
                                                                             CCMA 172
     J1=J+1
                                                                             COMA 173
     DO 500 K=J1.3
                                                                             COMA 176
 600 PLHSIG(J.F.I)=PLHSIG(J.K.I)/(PLHSIG(J.J.I)*PLHSIG(K.K.I))
                                                                             COMA 175
 700 PEHSIG(J.L.I) = PEHSIG(J.J.I) / DREEC
                                                                             COMA 175
     IF(MOD(EINESX.16).NE.1) GO TO 500
                                                                             COMA 177
     IF (LINES . CT.7) WRITE (DUTP. 3000) JUTER
                                                                             CCMA 175
    · WRITE(OUTF.3040)
                                                                             COMA 179
 800 CALL JUTRAD(REATO(I).LATD.LATM.SLAT.1)
                                                                             COMA 150
     CALL OUTHAD (RECHO(1).LCND.EDNM.SECN.1)
                                                                             COMA 131
      ARITE (DUTF . 40CO)
                                                                             CCMA 182
      #RITE(OUTF.3050) APRIDE, NAME(I).ISTAND(JI.LATO.LAIM.SLAT.LOND.
                                                                             COMA 173
         -ONM.SECN.HO(I), (PLHNCK(J.I),J=1.5)
                                                                             COMA 154
      CALL DUTRAD(RLAT(I)+LATD) LATM+ SLAT+1)
                                                                             COMA 185
      CALL DUTRAU(RLON(T)+LGNO+LGNM+SLON+1)
                                                                             COMA 156
     :J=IoL
                                                                             COKA 167
      IF(RLAT(I).LT.0.0D0) J=CASH
                                                                             COMA 16 P
     LATOP=1AES(LATO)
                                                                             COMA 159
      LATMP=IABS(LATM)
                                                                             COVA 190
      SEATP=CABS(SEAT)
                                                                             CSMA 191
      FUNCH BUCC. NAME(1). ISTAND(1). J. LATDP. LATMP. SLATP. LOND. LONM.
                                                                             COMA 192
         SLUN.H(I)
                                                                             CTMA 193
  FORCHT TALES ( MITAL COUTE, 30 EG) ADJUST. NAME ( 1 ). ISTANO( 1). LATD. LATM. SEAT. LONG.
                                                                             COMA 194
         LONM: SLONVH(Pr.(PEHSIG(U.U. I) VU=1.3) (PEHSIG(U.K.E).K=2.3).
                                                                             COMA 195
         PLHS16(2.3.1)
                                                                             CCM/ 195
 1000 IF(NGPCJM+LE+0) RETURN
                                                                             209A 197
C PRINT ADJUSTED GEOPOTENTIAL COEFFICIENTS
                                                                             CUMA 178
      NGPI=NCSEST-NGPCOM+1
                                                                             COMA 192
      0 = 11
                                                                             CUMA 200
      CO 1200 I=NGP1.NCSEST
                                                                             COMA 201
      11=11+1
                                                                             COMA 202
      IF(MUD(11,43),E0.1) WRITE(OUTP.307)) OUTER
                                                                             CONA 203
      IF(AUD(11.E).EQ.1) WRITE(CUTP.4000)
                                                                             CCMA 204
      J=1NOXCS(1.1)
                                                                             COMA 205
      N=INUXCS(2, I)
                                                                             CONA SOV
                                             REPRODUCIBILITY OF THE
      M=1NOXCS(3,1)
                                                                             COMA 207
      C1=GPVAL(1)*GFSIG(1)
                                             ORIGINAL PAGE IS POOR
                                                                             COMA 203
      CZ=GPVALC(I)+GPSIG(I)
                                                                              CCMA 209
      17(J. LO.1) CS(N. M+1)=C1
                                                                             COMA 210
      IF(J.EG.2) CS(31-N.33-M)=C1
                                                                             COMA 211
      K=INDANC(NSTART-NGP1+I)+NSTART-NGP1+I
                                                                              COMA 212
      SIGI=USJAT(JUNI(K))
                                                                              COMA 213
      $1G2=JF51C(1)*51G1
 1200 #RITE(GUTF. 3030) ICS(U) . N.M. C2. C1. S1G1. S1G2
                                                                              COMA 214
                                                                              CDYA 215
      RETURN
 3000 FORMATURE POSTATION POSTETION ADJUSTMENT SUMMARY FOR .
                                                                              CO"A 215
                                                                              COMA 217
              TEHITERATION NUMBER, 13 /)
 3010 FURMAT (THICKSX . 35HEARTH FIXED RECTANGULAR COORDINATES . 36X.
                                                                              COMA, 213
              ICHSTANDARD DEVIATION . I IX . I INCORRELATION // 21 X . THSTATION .
                                                                              C347 219
              1c). 1HX.12X.1HY.12 X.1HZ.11X.1HX.7X.1HY.7X.1HZ.5X.1 HX-Y.
                                                                              C344 234
              DX+3HX+7+5X+3HY+ZZ19X+11HHAAKI NUNBER+1X+3(8X+3H(M)+2X)+2X+ CHMN 221
                                                                              COMA 222
              3(EX,3E(M)))
  1030 FURMAI(*C********* NEGATIVE ANGUMENT TO DECAT FOR COMPONENT!
                                                                              COMA 222
```

	·		
•		COMA	224
	12.4 CF MASTER STATION . I3. S* S* C ** ** ** * * * * * * * * * * *	COMA	225
3030	ELIDWAT (14 -5X + A5 + 4 X + A6 + I6 + 3X + 31 12 + 2 + 1 X + 2 +	AUCO	225
3040	FORMAT (1FC/5X, 20HGERDETTC COUNCINATED TO LATITUDE,	COMA	227
	10X+11ECURRELATION//21/71/10	AMED,	228
	2X:14FEAST LONG 17UDE + 2X + ORDE 1 OF THE NAME NUMBER:	COMA	275
	3X.7HLAT-LON.2X.6HLAT-HT.2X.0HLON-HT/17X.11HAAAC 2(3X.13HDEG MN SECOND.1X).9H (METERS).2X.2(2X.5H(SEC).1X).	COMA	230
	2 (3x 1 1 mous and a mount a	COMA	231
	3X:3H(M)) FURNAT(1H +5X+A8+4X+A6+10+2(16+13+F7+3+1X)+F9+2+2F8+3+F8+2+3F8+A) FURNAT(1H +5X+A8+4X+A6+10+2(16+13+F7+3+1X)+F9+2+2F8+3+F8+2+3F8+A)	COMA	.232
3050	FURMAT (1H +5X+A8+4X+A6+10+2(16+13+F7+3+1X)+F9+2+2; 0231	COMA	233
3060	FURMAT (AC.14.41.212.F10.7.13.12.F10.7.F10.3)	COMA	۱۱ (. کے
3070	EDOMAT(161,31X,33HGENPUTERTIAL COL. LOTELLE	APROD	
		CCHA	2.36
		COMA	
		COMA	
3080		COMA	
3090	FORMAT (22X, A1 ; INC 12, 11 Ch COORD INATES FOR DUTER 1 (13)	ANCO	24(
ACCC	FORMAT(1X)	COMA	241
	35.75		





8.0-100

0 0 100

N A MÉ		COMPAR
PURPOSE		TO LOAD. CEMMON PARAMETERS INTO VAPIABLE STORAGE ARRAYS
CALLING SEC	QENCE	CALL COMPAR(GPVALO.GPS1G.GPND.GPVAL.RLAT.RLDN.H. NAME.RLATU.RLENU.HD.ISTANC.ESTAND. 1NDXCS.TTL.XYZSIG.PLHSIG.STASIG. PLHNCM.XYZNDV.STAXYZ.STXYZO.STANDS. LOC.DSIG.DENSO.DENS.AREA.CENTER. BCENTR)
SYMOJL	TYPE	DESCRIPTION
GEVALO	DF →	OUTPUT - A PRIORI VALUES FOR ADJUSTED GEORGIENTIAL COEFFICIENTS
GPS1G	υP	OUTPUT - SIGMAS FOR ADJUSTED GEOPOTENTIAL PARAMETERS
GFNU {1]	40	OUTPUT - LOCATIONS OF GEOPOTENTIAL PARAMETERS IN NORMAL MATRIX
GPVAL	DF	INPUT - CUPRENT VALUES OF ADJUSTED GEOPOTENTIAL COEFFICIENTS
RLAT (1)	UF	INPUT - STATION CRY ITUDE - PHI-DADIANS
REOR (1)	UP	INPUT - STATION LONGITUDE IN PADIANS
ਜੌ (1)	96	INPUT - STATION ESIGHT IN METERS
NAME (1)	υF	INPUT - STATION NAMES
HLATO	٥۴	OUTPUT - A PRIORI STATION LATITUDE IN RADIANS
FLGN0	υP	GUTPUT - A PRIORI STATION LONGITUDE IN RADIANS
F0 (1)	Ob	OUTPUT - A PRIORI STATION MEIGHT IN METERS
15TARU (11	[* 2	INPUT - STATION NUMBERS
25TANU (1)	1*2	INPUT & DUTPUT - MASTER STATION NUMBER TO WHICH ADJUSTED STATIONS ARE CONSTRAINED
1N0XCS - (3:1)	I * Z	DUTPUT - INCICES OF ADJUSTED GEOPOTENTIAL COEFFICIENTS

}

			_
TTL (1)	ĎΡ	OUTPUT - ADJUSTED PARAMETER TITLE ARRAY	
XYZSIG (3.3.1)	•	DUTPUT - STATION RECTANGULAR COORDINATE COVARIANCES	
PLHSIG (3,3,1)	R '	OUTPUT - STATION SPHERICAL COORDINATE COVA	
STASIG (3.3.1)		DUTPUT - SIGMAS AND COVARIANCES OF ADJUSTE STATION COCHDINATES	
PLHNOM (6:1)	R	DUTPUT - NOMINAL SIGMAS AND CORRELATIONS OF ADJUSTED SPHERICAL STATION COORDS	_
XYZNGM (6.1)	k '	OUTPUT - NOMINAL SIGNAS AND CORRELATIONS (ADJUSTED RECTANGULAR STATION COOR	
STAXYZ (3.1)	DΡ	INPUT - TRACKING STATION CARTESIAN COORDI	VATES
STXYZ0	90	OUTPUT - A PRIORI STATION POSITIONS	
ECMATE [1+E]	1 # 2	DUTPUT - LOCATIONS IN NORMAL MATRIX OF IN PERTAINING TU ADJUSTED STATION C	FORMATIUM CORDINATES
£66 (1)	1 * 2	SCRATCH.	
มราร. (1)	DF	GUTPUT - SIGMAS OF ADJUSTED SURFACE DENSI	•
CENSO	ЭP .	OUTPUT - A PRIOR! VALUES OF ADJUSTED SURF DENSITIES	ACE .
08K5 (11	DF	OUTPUT - SURFACE DENSITY VALUES	•
AREA -(1)	9F	DUTPUT - SUPFACE DENSITY SUB-BLUCK AREAS	
CENTE	а о р	CUTPUT - THE GEOCENTRIC COORDINATES OF T SUE-BLOCK CENTERS	
BCENT	k <i>U</i> F	OUTPUT - THE LATITUDE AND LINGITUDE OF T ADJUSTED SURFACE DENSITY BLOCK	
SUCK CUT I	NES USE	THAUDS STORE SQUANT STORE SQUANT SABMUN CARTUD VHIRYS VHOOV	PLH3UT NUMLOC
CESMON O	SLUČKE	CONDUT CONSTS CHARAM FLXBLK TRIBLK VARLOK	FMODEL
[KPUT: F	1L3	REPRODUCIBILIT ORIGINAL PAGE	Y OF THE
		ORIGINAL PAGE	

OUTPUT FILES

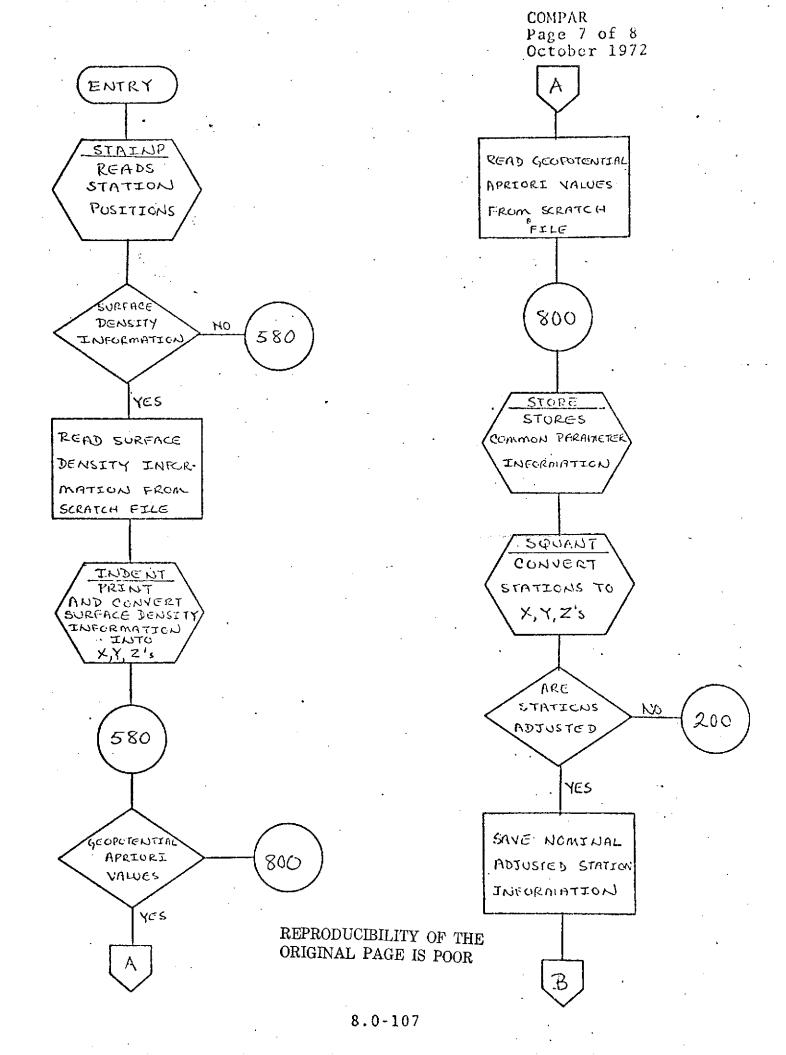
OUTP - PRINTER

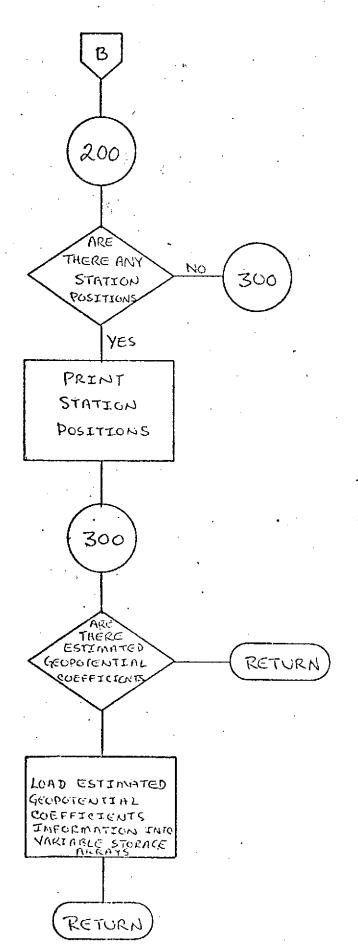
SUSRUTTINE COMPARKGOVALO.GOPIG.GOPATIGNACL.TROCKS.TTC.XYZSIT.PLMSIG.STASIG. "RLATO.RUDO.HO.15TARC.FSTAN.C.FSTAN.C.C.MOXES.TTC.XYZSIT.PLMSIG.STASIG." (CMP 119 "PLNNOR.XYZNOM.STAXYZ.STAY70.STANDS.LOC.DSIG.DENSO.DENS.AREA: (CMP 120 COMP 122 LOSICAL.APERE (A-PLO-Z) LOSICAL.APERE (A-PLO-Z) LOSICAL.APERE (A-PLO-Z) LOSICAL.APERE (CMP 1357 LOSICAL.APERE (CMP 122 INTEGER 2 GANC.ISTANC.ESTANO.INDXCS.STANDS.NDEXCS.LOC (CMP 122 LODICAL CAPERE (CMP 1357 INTEGER 2 GANC.ISTANC.ESTANO.INDXCS.STANDS.NDEXCS.LOC (CMP 122 LODICAL CAPERE (CMP 1357 LODICAL CAPERE (CMP 122 LODICAL CAPERE (CMP 122 LODICAL CAPERE (CMP 122 LODICAL CAPERE (CMP 122 COMP 122 COMP 122 COMP 123 COMP 124 COMP 126 COMP 127 COMP 126 COMP 127 COMP 127 COMP 128 COMP 128 COMP 128 COMP 129		
PLANDA INDIVIDUAL ISTANCE STANCE INDIVIDUAL (15 INDIVIDUAL COMP 12)		COMP 117
CAMP 120 LENTÉR-BOSENTA) IMPLICIT REALAS (A-H-O-Z) LOGICAL 4-PLES LOGICAL 4-PEGPE INTEGENZ GENC.ISTANC.ESTANO.INDXCS.STANDS.NDEXCS.LOC COMP 122 LOGICAL CAPEGPE INTEGENZ GENC.ISTANC.ESTANO.INDXCS.STANDS.NDEXCS.LOC COMP 127 REAL XYSIG.PLMSIG.STASIG.DLHNCM.XYZNDM.PSIG.GPSIGN.TWD1 COMP 127 REAL XYSIG.PLMSIG.STASIG.DLHNCM.XYZNDM.PSIG.GPSIGN.TWD1 COMP 127 REAL XYSIG.PLMSIG.STASIG.DLHNCM.XYZNDM.PSIG.GPSIGN.TWD1 COMP 127 COMP 127 REAL XYSIG.PLMSIG.STASIG.DLHNCM.XYZNDM.PSIG.GPSIGN.TWD1 COMP 128 COMP 128 COMP 129 COMP 1	SUBRUUTINE COMPAR(GPVALO, GPS10, GPNA, GRANE, AND YOS, TTI, XYZS1G, PLASIG, STASIG,	
MPLICIT REALE (APP-10-Z)	* RLATO . RLUNO . HO . I STAND . ESTANDE LOC . DESTG . DENSO . DENS . AREA	
IMPLICIT REALSE (A-F-0-Z)	PLHNCH .XYZNOM .STAXYZ . STXYZ USYN IDSTELLE TO DE TOUR	
LOGICAL CHOSP COMP 123 LOGICAL CHOSP COMP 124 LOGICAL CHOSP CRO. ISTANCESTANO, INDXCS, STANDS, NDEXCS, LOC LOG 124 INTEGER*2 GENG, ISTANCESTANO, INDXCS, STANDS, NDEXCS, LOC COMP 127 INTEGER*2 GENG, ISTANCESTANO, INDXCS, STANDS, NDEXCS, LOC COMP 127 LODGE PRECISION NAME, NODEL CIMENSICH, GROWLD(11), CRSTG(11), GFVAL(11), FLBN(11), H(1), CBMP 127 DDUBLE PRECISION NAME, NODEL CIMENSICH, GROWLD(11), CRSTG(11), GFVAL(11), FLBN(11), H(1), CBMP 128 NAME(11), CLATC(11), RACONO(11), HC(11), ISTANO(11), ESTANO(11), LOC(11), NAME(11), CLATC(11), XYZSIG(13, 31), HSTANO(11), ESTANO(11), LOC(11), DEMS(11), XYZSIG(13, 31), FTX YZC(11), ISTANUS(31), SUMI(5), CDMP 130 PLHNLM(6,11), STAXYZ(3, 11), STX YZC(111), STATUS(31), SUMI(5), CDMP 130 CDMMON/CCNOUT/IG(12), XYZSIG(13, 31), HSTANO(13), LONSO(11), CDMP 131 CDMMON/CCNOUT/IG(12), XYZSIG(11), GAN 1(11), AXYZC(13, 13), SUMI(5), CDMP 133 CDMMON/CCNOUT/IG(12), XYZSIG(11), AXYZC(11), STATUS(31), SUMI(5), CDMP 133 COMMON/CCNOUT/IG(12), XYZSIG(11), HSTANO(13), MSTARO, LSTAHT(6) CDMP 134 COMMON/CCNOUT/IG(17), MSTAAT, NSCOMS(13), MSTARO, LSTAHT(6) COMP 135 COMMON/CCNOUT/IG(17), MSTAAT, NSCOMS(13), MSTARO, LSTAHT(6) COMP 136 COMMON/CCNOUT/IG(17), MSTAAT, NSCOMS(13), MSTARO, LSTAHT(6) COMP 137 COMP 138 COMMON/CCNOUT/IG(17), MSTAAT, NSCOMS(13), MSTARO, LSTAHT(6) COMP 135 COMP 136 COMMON/CCNOUT/IG(17), NSTAAT, NSCOMS(13), MSTARO, LSTAHT(6) COMP 136 COMP 137 COMP 138 COM	• CENTER-BCENTR)	
LOGICAL CAPORS INTEGER## GENCLISTANC.ESTANO.INDXCS.STANOS.NDEXCS.LOC COMP 126 INTEGER## GENCLISTANC.ESTANO.INDXCS.STANOS.NDEXCS.LOC COMP 127 INTEGER CUTP.CATP.SCEC.FLIP EARL XYZSIGIPLHSIG.STASIG.PLÁNCM.XYZNOM.PSIG.GPSIGN.TWD1 COMP 127 COMP 128 COMP 129 COMP 120		COMP 122
INTEGER COMP. LATP. SCRC. FLIP REAL XYZSIG.PLING SCR. FLIP REAL XYZSIG.PLING STASIG.PLING.XYZNOM.PSIG.GPSIG.YTWD1 CDMP. 127 CDMP. 128		COMP 123
INTEGER CLTP.CATP.SCRC.FLTP REAL XYZSIGIPLHSIG.STASIG.PLHNCM.XYZNOM; PSIG.GPSIGN.TWD1	LUGICAL CAPGER	Ç0MP 12A
REAL XYZSIGIPLHSIG.STASIG.OLHNCM, XYZNOM, PSIGOSPIGATION DUBBLE PRECISION NAME, MODEL CIMENSICN GPV2L0(1).CPSIG(1).GEVAL(1).PLAT(1).EL3N(1).H(1). OMACS(31).TTC (1).XXZSIG(3-3-11.DLHSIG(3-3-1).STASIG(3-3-1). PLHNLM(6.1).STAXYZ(3-1).FTXYZC(3-1).STANUS(3-1).SUMI(5). OBNS(1).ARSA(1).CPXYZ(3-1).FTXYZC(3-1).STANUS(3-1).SUMI(5). OBNS(1).ARSA(1).CPXYZNOM(6.1).GPXIG(1).AXZSIG(1).DSNS(1).COMP 130. COMMON/CCNDUT/IG(17).NXTART.NXCOMX(3-).NSTANUS(3-1).SUMI(6). COMMON/CCNSUT/IG(17).NXTART.NXCOMX(3-).NSTARD.LSTAHT(6).COMP 132. COMMON/CCNSUT/IG(17).NXTART.NXCOMX(3-).NSTARD.LSTAHT(6).COMP 132. COMMON/CCNSUT/IG(17).NXTART.NXCOMX(3-).NSTARD.LSTAHT(6).COMP 132. COMMON/CCNSUT/IG(17).NXTART.NXCOMX(3-).NSTARD.LSTAHT(6).COMP 132. COMMON/FURSENCENCENCENCENCENCENCENCENCENCENCENCENCE	INTEGER#2 GENC. ISTANC. ESTAND. INDICO. STANDS THE	COMP 125
DUBLE PRECISION NAME, MOBEL	INTEGER CLTP : CATP : SCRC : FLTP	CDMP 126
COMMON_CENTROLOGY_CONT_CENTROLOGY_COMP_130 NAME(1), PLATE(1), RECNO.(1), HC(1), 15TANO(1), ESTANO(1), LOC(1), COMP_130 NOXES(3,1), TIL(1), XZZSIG(3,3,1), PLASIG(3,3,1), SUM(6), COMP_130 PLHNLM(6,1), STAYYZ(3,1), STXYZC(1,1), STAYMS(3,1), SUM(6), COMP_130 SUM2(3), TADI(2), XYZNOM(6,1), GON 1(1), AXYZ(6), DSIG(1), DENSO(1), COMP_130 OENS(1), AZEA(1), CENTER(1), ACCNY((1), ISUAF(1), JSURF(1), COMP_130 OENS(1), AZEA(1), CENTER(1), ACCNY((1), ISUAF(1), JSURF(1), COMP_130 OENS(1), AZEA(1), CENTER(1), ACCNY((1), ISUAF(1), JSURF(1), COMP_130 CUMMON/CENSTS/DP1, OTWOPI, CRAC, FSEC COMMON/CENSTS/DP1, OTWOPI, CRAC, FSEC COMMON/CENSTS/DP1, OTWOPI, CRAC, FSEC COMMON/CENSTS/DP1, OTWOPI, CRAC, FSEC COMMON/FERRA/MSTA, KMAST, NSTESTS, ND11, MBIAS, NGPC1, NGPC2, NGPCOM, COMP_130 COMMON/FERRA/MSTA, KMAST, NSTESTS, ND11, MBIAS, NGPC1, NGPC2, NGPCOM, COMP_130 COMMON/FERRA/MSTA, KMAST, NSTESTS, ND11, MBIAS, NGPC1, NGPC2, NGPCOM, COMP_130 COMMON/FERRA/MSTA, KMAST, NSTESTS, ND11, MBIAS, NGPC1, NGPC2, NGPCOM, COMP_130 COMMON/FERRA/MSTA, KMAST, NSTEST, ND11, MBIAS, NGPC1, NGPC2, NGPCOM, COMP_130 COMP 140 COMMON/FERRA/MSTA, KMAST, NSTEST, ND11, MBIAS, NGPC1, NGPC2, NGPCOM, COMP_140 COMP 140 COMP 141 COMPON/FERRA/MSTA, KMAST, NSTEST, ND11, NGPC, NGP	REAL XYZSIGIPLHSIGISTASIGIPLHNUMIXTZNOMIPSIGIOTSTO	COMP 127
. NAME(1),FLATC(1), RECROS(1),HC1),TANNO(1), STATSIG(3,3:1), COMP 130 . INDXCS(3:1),TTL(1),XXZSIG(3:3:1),DANSIG(3:3:1),SUMIG(3:3:1),COMP 131 . PLHALM(6:1),STAXYZ(3:1),STXYZC(3:1),STAMDS(3:1),SUMIG(3),COMP 132 . DANS(1),AREA(1),CPNTER(1),GDN 1(1),AXYZC(3:1),SUMIG(1),COMP 133 . CUMMUN/CCNOUT/IGI(7),NSTART.NEGMX(1),RSTARD(1.STAHT(6) COMP 133 . CUMMUN/CCNOUT/IGI(7),NSTART.NEGMX(1),RSTARD(1.STAHT(6) COMP 134 . CUMMUN/CCNOUT/IGI(7),NSTART.NEGMX(1),RSTARD(1.STAHT(6) COMP 135 . COMMUN/CCNOUT/IGI(7),NSTART.NEGMX(1),RSTARD(1.STAHT(6) COMP 135 . COMMUN/FECDEL/INDEX(S),OS(30:33:NO)DL(29) COMP 136 . COMMUN/FECDEL/INDEX(S),CS(30:33:NO)DL(29) COMP 146 . CUMMUN/FECDEL/INDEX(S),CS(30:33:NO)DL(29) COMP 146 . CUMMUN/FECDEL/INDEX(S),CS(30:33:NO)DL(29) COMP 146 . COMMUN/FECDEL/INDEX(S),CS(30:33:NO)DL(29) COMP 146 . COMP 145 . COMMUN/FECDEL/INDEX(S),CS(30:33:NO)DL(29) COMP 146 . COMP 145 . COMP	DOUBLE PRECISION NAME, MODEL	COMP 125
INDUXCS(3;1);TIL(1); XYZSIG(3;3;11;SIMYG(3;1);SUMY(6); COMP 131	CIMENSICA GPVALO(1) . GPSTG(1) . GFVAL(1) . GSTANO(1) . EOC(1) .	COMP 129
PHANGM(5.1), STAXYZ(3.1), STXYZ(G; 1), STAYZ(G; 1), SDAS(1), COMP 172 SUM2(3), TAZ1(2), XYZNOM(E:1), GDN 1(1), XYZ(G; 1), SDAS(1), COMP 133 OBNS(1), AREA(1), CENTER (1), ACENT((1), ISURF(1), JSURF(1) CUMMON/CCROUT/IGI(7), MSTART, NECMX(D; NSTARO, LSTART(G) CUMMON/CCROUT/IGI(7), MSTART, NECMX(D; NSTARO, LSTART(G) CUMMON/CCROUT/IGI(7), MSTART, NECMX(D; NSTARO, LSTART(G) COMMON/CROSTS/DPI, DTWOFI, DRAG; FSEC COMAUN/OF/RAM/NSTA, NMAST, NSTEST, NSITINBIA, MSIAS, NGPC1, NGPC2, NGPCOM, OND 135 COMMON/FRAM/NSTA, NMAST, NSTEST, NSITINBIA, MSIAS, NGPC1, NGPC2, NGPCOM, OND 136 COMMON/FRAM/NSTA, NMAST, NSTEST, NSITINBIA, NSTEST, NTITIEN, INNASW, COMMON/FRAM/NSTA, NMAST, NSTEST, NSITINBIA, NGPC1, NGPC2, NGPCOM, COMMON/FRAM/NSTA, NMAST, NSTEST, NSITINBIA, NSTEST, STANO, COMMON/FRAM/NSTA, NMAST, NSTEST, NSITINBIA, NSTEST, NSITINBIA, NGPC1, NGPC2, NGPCOM, COMMON/FRAM/NSTA, NSTEST, NSITINBIA, NGC, STATCH, STAY, NGC, STAY, N	• NAME(1).FLATC(1).RLCN3(1).HC(1).131ANC(1).STASIG(3,3.1).	COMP 130
SUM2(3),TAD1(2),XYZNON(6:1),GDN1(1),AXYZ(5),USURF(1) COMP 138 Debs(1),AREA(1),CFNTER(1),ACENT((1),ISURF(1),ISURF(1) SURF(1) CUMMON/CCNDIT/IGI(7),NSTART,NECNMX(3),NSTARD,LSTART(6) COMP 136 CUMMON/CCNSTEYOPI,OTKOPI,GRAD,ESEC COMAUN/SEPRAM/NSTA,NAMAST,NSTEST,NDITH,MBIAS,NGPC1,NGPC2,NGPCOM, COMP 136 COMMUN/SEPRAM/NSTA,NAMAST,NSTEST,NDITH,MBIAS,NGPC1,NGPC2,NGPCOM, COMP 136 COMMUN/SEPRAM/NSTA,NBERN,NDERN,NDERST,NTIDST,NTIDEN,INNRSW, COMP 136 COMMUN/FLABLK/NUCXCS(960,2),PSIN(6,381),PLH3%(1290) COMP 139 COMMUN/FLABLK/NUCXCS(960,2),PSIN(6,381),PLH3%(1290) COMP 142 COMMUN/FLABLK/NUCXCS(960,2),PSIN(6,381),PLH3%(1290) COMP 144 COMMUN/FLABLK/NUCXCS(960,2),PSIN(6,381),PLH3%(1290) COMP 144 COMMUN/FLABLK/NUCXCS(960,2),PSIN(6,381),PLH3%(1290) COMP 144 COMMUN/FLABLK/NUCXCS(960,2),PSIN(1),PCH3%(1290) COMP 144 COMMUN/FLABLK/NUCXCS(960,2),PSIN(1),PCH3%(1290) COMP 144 COMMUN/FLABLK/NUCXCS(960,320,4),PSIN(1),PSIN(1) COMP 144 COMMUN/FLABLK/NUCXCS(960,4),PSIN(1),PSIN(1) COMP 144 COMMUN/FLABLK/NUCXCS(960,4),PSIN(1),PSIN(1),PSIN(1) COMP 144 COMP 144 COMP 144	INUXCS(3,1),TTL(1),XYZSIG(3,3,1),DLNSIG(3,1),SIM1(5),	COMP 131
DENS(1) AREA(1) CENTER(1) ACENT ((1) ISORE(1) ORDE(1) COMMUNICCEDUT/IGI(7) INSTATINE (NEXTAD ALSTARD (5) COMMUNICCEDUT/IGI(7) INSTATINE (NEXTAD ALSTARD (5) COMMUNICCEDUT/IGI(7) INSTATINE (NEXTAD ALSTARD (5) COMMUNICEDUT/IGI(7) INSTATINE (NEXTAD (5) COMMUNICEDUT/IGI(7) INSTATINE (NEXTAD (5) COMMUNICEDUT/IGI(7) INSTATINE (NEXTAD (5) COMMUNICEDUT/IGI(7) INSTATINE (1) COMMUNICEDUT/IGI(7) INSTATINE (1) COMMUNICCEDUT/IGI(7) INSTATINE (1) COMMUNICEDUT/IGI(7) INSTATINE (1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMUNICEDUT/IGI(7) INSTATINE (1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMUNICEDUT/IGI(7) COMMINICEDUT/IGI(1) COMMINICEDUT/IGI(7) COMMINICEDUT/IGI(7) COMMINICEDUT/IGI(7) COMINICEDUT/IGI(7) COMMINICEDUT/IGI(7) COMINICEDUT/IGI(7) COMMINICEDUT/IGI(7) COMINICEDUT/IGI(7) COMMINICEDUT/IGI(7) COMMINICEDUT/IGI(7) COMMINICEDUT/IG	• PLHNUM(5.1).STAXYZ(3.1).STXYZC(3.1).STX(20.1).DSIG(1).DENSO(1).	C046 133
COMMON/CENSTS/DPI-DTWOPI-CRAD, FSEC COMMON/CENSTS/DPI-DTWOPI-CRAD, FSEC COMMON/CENSTS/DPI-DTWOPI-CRAD, FSEC COMMON/CENSTS/DPI-DTWOPI-CRAD, FSEC COMMINSTALANMA	SUM2(3),TAC1(2),XYZNGM(6:1),GAN (1), 4A12(3), 15/15/15/15/15/15/15/15/15/15/15/15/15/1	COMP 133
COMMON/CCNSTS/DI.OTWOPI.CRAD.FSEC COMMON/CCNSTS/DI.OTWOPI.CRAD.FSEC COMADN/SE/RAM/NSTA.NMAST.NSTEST.NDIM.MBIAS.NGPC1.NGPC2.NGPCOM. COMP 135 COMADN/SE/RAM/NSTA.NMAST.NSTEST.NDIM.MBIAS.NGPC1.NGPC2.NGPCOM. COMP 137 NSEST.CROPCR.LIBI.LIM2.NDEN.NDIM.ST.NTIDEN.INNEW. COMP 138 NCLNST.NDCCNS COMMON/FLXBLK/MCIXCS(960.2).MSIG(6.351).PCH3W(1290) SDM 139 COMMON/FLXBLK/MCIXCS(960.2).MSIG(6.351).PCH3W(1290) COMP 140 COMMON/FLXBLK/MCIXCS(960.2).MSIG(6.351).PCH3W(1290) COMP 140 COMMON/FLXBLK/NDEXCS(960.2).MSIG(6.351).PCH3W(1290) COMP 140 COMMON/FRODEL/INDEXCS(960.2).MSIG(6.351).PCH3W(1290) COMP 140 COMP 144 COMP 144 COMP 144 COMP 144 COMP 144 COMP 144 COMP 145 COMP 146 COMP 156 COMP 156 COMP 156 COMP 157 COMP 158 COMP 158 COMP 158 COMP 158 COMP 158 COMP 158 COMP 159 COMP 15	DENS(1), AREA(1), CENTER(1), ACENTR(1), ISOURE (17, USUA)	COMP 134
COMMON/CENTRAM/NSTA, NAMAST, NSTEST, NDTY-NBIAS, NGPC1, NGPC2, NGPCOM, NUSEST, CERCER-LITEL, LIM2, NDEN, NDERST, NTIDST, NTIDEN, INNRSW, NUSEST, CERCER-LITEL, LIM2, NDEN, NDERST, NDERST, NDERST, NDERST, NUSEST, CERCER-LITEL, NDEN, NDERST, NDERST, NDERST, NDERST, NDERST, NDERST, NUSEST, NDEN, NDERST, NDE	CUMMUN/CENDUT/IG1(7), NSTART, NE CHMX(8), NSTARD, LSTAR, TO.	
. NCENTIADERS (181.LIM2.NSEN,NSESTANTISSTATER) . NCENTIADERS CUMMON/FLESEK (180.EX (3).451.M55(6.351).PCH3%(1290) CUMMON/FREDEL/INDEX (6).CS (30.32).M35L(2) CUMMON/FREDEL/INDEX (6).CS (30.32).M35L(2) COMP 142 CUMMON/FREDEK/INTP.OUTP.DATP(7).SCKC.FLTP(2) COMP 142 COMP 143 COMP 144 COMP 144 COMP 145 COMP 144 COMP 145 COMP 146 COMP 150 COMP 150 COMP 151 COMP 152 COMP 151 COMP 152 COMP 153 COMP 154 COMP 155 COMP 156 COMP 156 COMP 157 COMP 158 COMP 159	CUMMON/CONSTS/DPI-DTWOPI-DRADIESEC	
COMMON/FLABLK/NUEXCS(9c0.21,M91G(6.361),PCH5%(1290) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(0) COMMON/FMEDEL/INDEX(6).CS(0) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDL/INDEX(60) COM	COMAUN/CEFRAM/MSTA, NMAST, NSTEST, NOTH, MUTAS, NOPCLING COMAUN/CEFRAM/MSTA, NMAST, NSTEST, NOTA, MUTAS, NOPCLING COMAUN/CEFRAM/MSTA, NMAST, NOPCLING COMAUN/CEFRAM/MSTA, NMAST, NSTEST, NOTA, MUTAS, NOPCLING COMAUN/CEFRAM/MSTA, NMAST,	CCPP 137
COMMON/FLABLK/NUEXCS(9c0.21,M91G(6.361),PCH5%(1290) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(30.33),V0DEL(9) COMMON/FMEDEL/INDEX(6).CS(0) COMMON/FMEDEL/INDEX(6).CS(0) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDEL/INDEX(60) COMMON/FMEDL/INDEX(60) COM	· UNUSESTICAPERALIMI, LIME, NOE NINCE 451, NIIOSIINI IDEN, IMANOSII	
COMMONZELABLE XNOEXES (300.3) PSTO(3.3) VODEL(3) COMMONZELORINDEX (6) CS (30.33) VODEL(3) COMMONZELORINDEX (7.34 TEST (7	MCLASTANDCINS	• -
COMMON/FMCDEL/INDEX(A).CS(30.33).MODEL(3) COMMON/FMCDEX(A).CS(30.33).MODEL(3) COMMON/FMCDEX/GMSIGN(2250) CATA AXYZ/3H. X.3H. Y.3H. Z.5H. XCOT.5H YDOT.5H ZDOT/FBL/1H / COMP 163 CATA AXYZ/3H. X.3H. Y.3H. Z.5H. XCOT.5H YDOT.5H ZDOT/FBL/1H / COMP 164 CATA CMD/SHCCC(0//SMC/SHSCCOO/ COUIVALENCE (ISURF(1).NCEXCS(1.1)).(JSURF(1).GPSIGN(1)) COMP 165 EQUIVALENCE (ISURF(1).NCEXCS(1.1)).(JSURF(1).GPSIGN(1)) COMP 165 COMP 167 CAREAD STATICH FCSITIJINS CALL STATING (NSTA-ISTANC.NAME.FRLAT.RLON.H.NSTARD.NSTEST.ESTAND) COMP 169 COMP 160 COMP 161 COMP 161 COMP 162 COMP 163 COMP 163 COMP 163 COMP 164 COMP 165 COMP 165 COMP 166 COMP 166 COMP 167 COMP 167 COMP 168 COMP 169	CUMMON/FLXBLK/NCEXCS(360+2)+P510(5+351)+PER54(1290)	•
COMMUNITERLEXISTANCION (250) COMMENTARELOX / GRESIGN (250) CATA AXYZ/3H. X.3H Y.3H Z.5H XEDT.5H YDDT.6H ZDDT.6BL/1H / COMP 143 LATA CWD/SHCOC(O/.5 WD/SHSCOO)/ EQUIVALENCE (ISURF(I).NDEXCS(I.I)).(JSURF(I).GPSIGN(I)) COMP 146 EQUIVALENCE (TWC.1WDI(I)) NSTARTENLIM—3 **MMAST-NGFCCM—NTIGEN+1 CALL STAIND (NSTARISTAND.NAME.RLAT.RLON.H.NSTARD.NSTEST.2STAND) END FILE SCRC RLWIND SCRC IF(NJIN.LE.O) GO TO SAO CALL SURFACE CENSITY INFORMATION FROM SCRATCH FILE COMP 152 TOO READ(SCRC) (ISURF(I).I=II.I2) COMP 155 TOO READ(SCRC) (ISURF(I).I=II.I2) COMP 156 COMP 157 COMP 157 COMP 158 COMP 159	COMMUNIFACIOEL/INDEX(A).CS(30.35).VJJEL(3)	=
COMMENT/FREURX/GPSIGN(2250) GATA AXYZ/ZH: X,3H Y,3H Z,5H XCOT,5H YDOT,5H ZDOT/FBL/1H / COMP 163 LATA CHD/SHCOC(O/,5 WC/5H5COOO/ COUIVALENCE (ISURF(1),NDEXCS(1,1)),(JSURF(1),GPSIGN(1)) EQUIVALENCE (ISURF(1),NDEXCS(1,1)),(JSURF(1),GPSIGN(1)) NSTAKTENCIME AS MARASTENGEC MENTICEN+1 COMP 165 CALL STAILION FOSITIINS CALL STAINCH SCSTC COMP 150 END FILE SCRC REWIND SCEC IF (NJEN-LE-0) GD TO 580 CHIAD SURFACE CENSITY INFORMATION FROM SCRATCH FILE COMP 153 COMP 154 COMP 155 COMP 155 COMP 156 COMP 157 COMP 157 COMP 158 COMP 159	CUMMUNITERILK/INTP.OUTP.DATP(7),SCRC.FELP(2)	
COMP 16A LATA CW2/SHCC(0/,SWC/SHSCOO/ EQUIVALENCE (ISURF(1),NCEXCS(1,1)),(JSURF(1),GPSIGN(1)) COMP 16A EQUIVALENCE (ISURF(1),NCEXCS(1,1)),(JSURF(1),GPSIGN(1)) COMP 16A EQUIVALENCE (ISURF(1),NCEXCS(1,1)),(JSURF(1),GPSIGN(1)) COMP 16A COMP	COMMENTALE CONTRACTOR (250)	
LATA CWD/SHCCC(O/,SWD/EFSC000/ EQUIVALENCE (ISURF(I),NCEXCS(I,I)),(JSURF(I),GPSIGN(I)) EQUIVALENCE (ISURF(I),NCEXCS(I,I)),(JSURF(I),GPSIGN(I)) COMP 165 EQUIVALENCE (ISURF(I)) NSTARTENE IM-3*NMAST-NGFCCM-NTIGEN+1 COMP 167 CALL STAINP(NSTA-ISTANE,NAME,RLAT,RLON,H,NSTARD,NSTEST,ESTAND) COMP 167 END FILE SCRC REWIND SCRC IF(NJEN,LE=0) GO TO 580 COMP 152 COMP 153 COMP 154 COMP 155 COMP 155 COMP 156 COMP 156 COMP 157 COMP 157 COMP 157 COMP 158 COMP 158 COMP 159 COMP 159 COMP 159 COMP 156	CATA MXYZZZEN X+3H Y+3H Z+5H XDDT+5H YDD1+5H ZDD17+3EZII	
### ##################################		
EQUIVALENCE (TWC.TWO1(1)) NSTART=NCIM=3*MMAST=NGECCM=NTICEN+1 C READ STATION FOSITIONS CALL STAINCN FOSITIONS CALL STAINCNSTALISTANG.NAME.RLAT.RLON.H.NSTARD.NSTEST.ESTAND) COMP 150 COMP 150 COMP 151 COMP 151 COMP 152 COMP 153 COMP 153 COMP 154 COMP 155 COMP 156 COMP 166	EQUIVALENCE (ISUAF(I).NUEXCS(I.I)).(JSURF(I).GPSIGN(I).	=
C READ STATION FCSITIURS COMP 168 C READ STATION FCSITIURS CALL STATION FCSITIURS CALL STATION FCSITIURS COMP 159 END FILE SCRC COMP 151 END FILE SCRC COMP 152 END FILE SCRC COMP 152 C REWIND SCRC COMP 153 C READ SURFACE DENSITY INFORMATION FROM SCRATCH FILE COMP 153 UO 700 II=1.4 050.450 COMP 154 UO 700 II=1.4 050.450 COMP 155 COMP 155 COMP 157 COMP 158 COMP 158 COMP 159 CO	FOULVALLNCE (THC+TWO1(1))	=
C READ STATION FOSITIONS CALL STAINP(NSTA-ISTANG.NAME, REAT, REDN. H, NSTARD, NSTEST. ESTAND) COMP 150 COMP 150 COMP 151 END FILE SCRC REXIND SCRC IF(NJEN-LE-0) GD TO 580 COMP 152 COMP 153 COMP 154 COMP 155 COMP 155 COMP 156 COMP 156 COMP 157 COMP 156 COMP 157 COMP 157 COMP 158 COMP 158 COMP 159 COMP 169 COMP 169 COMP 169 COMP 169 COMP 169		_
CALL STAINP(NSTAINTAND, NAME, REAT, REDN, H, NSTAND 1.03 E	C READ STATION FOSITIONS	
END FILE SCRC REWIND SCRC IF (NUMENALEAD) GO TO SAD C READ SURFACE DENSITY INFORMATION FROM SCRATCH FILE COMP 153 COMP 154 CO 700 II=1.4050.650 I2=MINO(II+660.650) COMP 155 COMP 156 COMP 157 COMP 158 COMP 158 COMP 159	CALL STAINP(NSTAISTAND, NAME, REAT, REUN, HINST ARDINGTEST COTATION	
#EWIND SCRC IF(NJEN.LE.O) GD TO 500 C READ SURFACE DENSITY INFORMATION FROM SCRATCH FILE CD 700 II=1.4050.450 I2=MIND(II+060.4050) 700 READ(SCRCI (ISURF(II)-I=II-I2) CJ 700 II=1.2026.450 I2=MINJ(II+1.405.2076) 750 READ(SCRC) (JSURF(I)-I=II-I2) COMP 157 CPRINT AND CONVERT SURFACE DENSITY INFORMATION INTO X, Y, Z'S COMP 160 CALL INJENT(USIG.DENSO.DENS.APEA.CENTER.SCENTR) CPRINT AND CONVERT SURFACE FROM SCRATCH FILE COMP 161 COMP 162 COMP 163 COMP 163 COMP 163 COMP 164 COMP 165	END FILE SCRC	
IF(NJEN-LE-0) GO TO EBO COMP 153 COMP 154 COMP 155 COMP 156 COMP 157 COMP 157 COMP 158 COMP 158 COMP 158 COMP 158 COMP 158 COMP 159 COMP	REWIND SCFC	=
COMP 154 UD 700 I1=1.4050.650 I2=MINO(114040.4050) 700 READ(5CRC) (ISURE(11.1=11.12) COMP 155 COMP 156 COMP 157 COMP 156 COMP 157 COMP 158 COMP 158 COMP 158 COMP 158 COMP 158 COMP 159	IF(NUEN-LE-0) GO TO 580	-
### 155	C ALAD SURFACE DENSITY INFORMATION FROM SCRAICH FILE	- ,
12=MINO(11466C, 4050)	to 700 11=1.4050,450	-
700 READ(SCRC) (ISURF(II, I=II, I2) COMP 157 CU 700 II=1,2020,450 I2=MIND(II+465,2026) 710 READ(SCRC) (USURF(I), I=II, I2) C PRINT AND CUNVERT SURFACE DENSITY INFORMATION INTO X, Y, Z'S COMP 160 CALL INJENT(USIG, DENSO, DENS, APEA, CENTER, SCENTR) CALL INJENT(USIG, DENSO, DENS, APEA, CENTER, SCENTR) COMP 161 COMP 163 COMP 163 COMP 164 COMP 165	12=M1NO(114¢65,6050)	
OU 700 11=1,2026,450 12=MIND(11+465,2026) 770 READ(5CRC) (JSURF(1),1=11.12) C PRINT AND CONVERT SURFACE DENSITY INFORMATION INTO X, Y, Z'S CALL INJENT(SSIG,DENSO,DENS,APEA,CENTER,SCENTR) CALL INJENT(SSIG,DENSO,DENS,APEA,CENTER,SCENTR) COMP 163 CHEAD GLOPOTENTIAL A DRIGHT VALUES FROM 3CRATCH FILE NGPA=16C5EST=NGPCOM COMP 165	700 READ(SCRC) (ISURF(I)+[=11+12)	
IZ=MINJ(II++65,2026) 750 HEAD(5CRC) (JSURF(I)+I=II+I2) C PRINT AND CONVERT SURFACE DENSITY INFORMATION INTO X, Y, Z'S CALL INJENT(SSIG+DENSO+DENS+APEA+CEHTER+SCENTR) CALL INJENT(SSIG+DENSO+DENS+APEA+CEHTER+SCENTR) COMP 163 CHEAD GLOPOTENTIAL A DRIGHT VALUES FROM SCRATCH FILE NGPA=HCDEST=NGPCOM COMP 165	©U 750 11=1+202€+450	• • • • • •
773 HEAU (SCRC) (USURF(I), I=I1, I2) C PRINT AND CONVERT SURFACE DENSITY INFORMATION INTO X, Y, Z'S COMP 160 CALL INDENT(USIG, DENSO, DENS, APEA, CENTER, SCENTR) COMP 161 EPO 1F (NGPCON, LS, O) GO TO FCO C REAU GLOPUTENTIAL A PRIORI VALUES FROM SCRATCH FILE NGPATICSEST-NGPCOM COMP 163	(3505+3511)Cn1m=c1	
C PRINT AND CONVERT SURFACE CENSITY IN-DEWARTER INTO AN TO COMP 161 CALL INDENT (USIG: DENSO: DENS: APEA: CENTER: BCENTR) COMP 162 COMP 163 COMP 163 COMP 164 COMP 164 COMP 164 COMP 164 COMP 165	$=$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	
CALL INDENT (USIG:DENSO-DENS, APEA, CERTER SCENTAR) EPO IF (NGP CCM + U.S.O.) GO TO FCO C REAU GUIPHITENTIAL A PRIDET VALUES FROM SCRATCH FILE COMP 163 COMP 164 AGARRICSEST-NGP COM COMP 165	THE THEORY OF THE TOTAL TOTAL AND A TRANSPORTED TO THE TRANSPORT OF THE TR	
### 1F (RIGHCOM + 1.5.0) GO TO ECO C REAU GLUPGIENTIAL A PRIORI VALUES FROM BORATCH FILE OPEN 163 COMP 163 COMP 163 COMP 165	CALL INDUNT (USIG DENSO DENS APPRACEMENTO DE LA CONTRE DEL LA CONTRE DEL LA CONTRE DEL LA CONTRE DEL LA CONTRE DE LA CONTR	
C READ GLORDIENTIAL A PRIORI VALUES FROM SCRATCH FIGE NGPA SHODE STHNOROUN COMP 164 COMP 165		= :
NGPA =1/CSEST=NGPCOM COMP 165	C READ GUINGTENTIAL A PRICET VALUES FROM SCRATCH FIEL	
33 JA 11-1 1 300 JV 229	NGPA =1+C5 = ST = NGPCOM	
	an 600 [1=1,439CUM,225	COMP 16c
TREMING(NCOCOV, 11+28¢)	[2=M1AC(NCCCOV, 11+226)] ON PHR	COMP 167
REPRODUCIBILITY OF THE COMP 163 ORIGINAL PAGE IS POOR	REPRODUCIBILITY OF THE	COMM. TWY
ORIGINAL 1122	ORIGINAL 123	•

```
COMP 15E
      DO 650 I=1.NGFCOM
                                                                             COMP 159
     [1=14NGPA
                                                                             COMP 170
  650 GPVALG(11)=GPVAL(1)
                                                                             COMP 171
C DETAIN STURED COMMON PARAMETER INFORMATION
                                                                             COMP 172
  400 CALL STURE (.TRUE. . . TRUE.)
                                                                             COMP 173
C CCNVERT STATIONS TO X. Y. Z'S
                                                                             COVP 174
      IF (NSTA. GT.O) CALL SQUANT (NSTA. NSTEST. + TRUE.)
                                                                             COMP 175
      IF(NDIM+LE+0) GO TO 5
                                                                             COMP 476
      MIGM. I=I 1 GG
                                                                             COMP 177
      TTL(1)=ol
                                                                             COMP 175
      IF(IaLT.7) TTL(I)=AXYZ(I)
                                                                             CCMP 179
    1 CONTINUE
                                                                             COMP 120
    # IF(NSTEST.EQ.O) GO TO 200
                                                                             COMP 181
C SAVE NUMINAL ADJUSTED STATION INFORMATION
                                                                             COVP 132
      DU 20 I=1.NSTEST
                                                                             COMP 133
      STAYZU(1:1)=STAXYZ(1:1)
                                                                             COMP 134
      STAYZO(2:1)=STAXYZ(2:1) .
                                                                             CUMP 185
      STXYZO(3.1)=STAXYZ(2.1)
                                                                             COMP 155
      REATO(I)=RLAT(I)
                                                                             CO#2 137
      RLONO(1) = FLON(1)
                                                                             COMP 155
      F0(1)=F(1)
                                                                             COMP 199
       J=ESTANJ(I)
                                                                             COME 100
       ESTAND(1)=NUMER2(J,ISTAND.NSTEST)
                                                                             COVP 191
       IF(PLHS»(I)) GG TG 10
                                                                             COMP 192
       STASIG(1.1.1)=PSIG(1.1)
                                                                             COMP 193
       STA516(2.2.1)=PS1G(2.1)
                                                                             COMP 154
       $TA51G(3,3,1)=PSTG(3,1)
                                                                             COMP 195
       STASIG(1+2+1)=PSIG(4+1)
                                                                             CCAR 10.
       STASIG(1.3.1)=PSIG(5.1)
                                                                             COMP 197
       STASIG(2.3.1)=PSIG(6.1)
                                                                             COMP. 195
       GD TU 23
                                                                             COMP 199
    10 PLHSIG(1:1:1)=PSIG(1:1)
                                                                             COMP 200
       PLHSTG(2,2,1) = PSIG(2,1)
                                                                              cave sat
       PLH516(3,2,1)=PS16(3,1)
                                                                             COMP 202
       PLHS I3 (1.2.1) = PS 16 (4.1)
                                                                              COMP
                                                                                   203
       PLH316(1:3:1)=PS16(5:1)
                                                                              COMP 204
       PLHSIG(2.3.1)=PSIG(6.1)
                                                                              COMP
                                                                                  205
    20 CONTINUE
                                                                              Casp 206
       SO 120 LL=1.2
                                                                              COMP 207
       CO 120 I=1.NSTEST
                                                                              COMP 20F
       II=ESTANC(I)
                                                                              COMP 205
       IF([1.60.1) GC TO 40
                                                                              C078 010
       IF(LL.ED.1) GE TO 120
                                                                              COYP 211
       CO JO J=1.3
                                                                              COYP 213
       00 30 K=1.7
                                            REPRODUCIBILITY OF THE
                                                                              COMP 213
    30 STASIG(J.K.1)=STASIG(J.K.11)
                                                                              COMP SIZ
                                            ORIGINAL PAGE IS POOR
       GJ TU 90
                                                                              CUMP 815
    40 IF(LL.EG.2) GC TO 120
                                                                              C3MP 216
       30 50 J=1.2
                                                                              $3MP 217
       CJ 30 K=2.3
                                                                              COMP DIE
        IF(J.EG.K) GO TO 60
                                                                              00MP 210
        IF(PLH5W(11) GU TO 50
                                                                              C340 221
        STASIG(J.K.I)=STASIG(J.K.I)=STASIG(J.J.I)*STASIG(K.K.I)
                                                                              CDVP 221
        STASIG(K. .. . !) =STASIG(J.K. I)
                                                                              COMP DOD
        CO IJ 63
                                                                              COMP ETS
     50 PEHSTO(J.K.I)=PEHSTO(J.K.I)+PEFSTA(J.J.I)+PEHSTO(K.K.I)
```

```
COMB SS#
   pLHSIG(K+u+1)=PLHSIG(J+K+1)
                                                                          COMP 225
 60 CONTINUE
                                                                          COMP 226
    CO 80, J=1.2 .
                                                                          COMP 227
    IF(PEHSW(1)) 60 TO 70
                                                                          CDMP 228
    STASIG(J.J.1)=ST45IG(J.J.1)**2
                                                                          COMP 229
                                                                          COMP 230
 70 PLHSIG(J.J.1)=PLHSIG(J.J.1)**2
                                                                          COMP 231
 BO CONTINUE
                                                                          CDMP 232
     IF(PLHSW(I)) GO TO 100
                                                                          CDMP 233
 50 CALL PLHCUT(STAXYZ(1.1).STASIG(1.1.1).PLHSIG(1.1.1).P1.P2.P3)
                                                                          COMP 234
     GO TU 120
                                                                          COMP 235
100 CALL VCJAV(PLHS1G(1.1.1).STASIG(1.1.1).XYZSIG(1.1.1)) -
                                                                           COMP 236
120 CONTINUE
                                                                           COMP 237
     DO 150 I=1.NSTEST
                                                                          COMP 233
    'DO 130 J=1.3
                                                                           COMP 239
    AYZNUM (J.I) = SCRT (STASIG(J.J.I))
                                                                           COMP 240
 130 PLHNCM(J.1)≈SCRT(PLHS1G(U.J.I))
                                                                           COMP 241
     DG 140 J=1.3
                                                                           COMP 242
   . J1=J/3+1
                                                                           COMP 213
     J2=(J+41/2
                                                                           COMP 2AA
   - xyznum(J+3+1)=STASIG(J1+J2+1)/(XYZNJM(J1+1)*XYZNOM(J2+1))
 140 PLHNOM(J+3.1)=PLHSIG(J1.J2.1))/(PLHNOM(J1.1)*PLHNOM(J2.11)
                                                                           COMP 2A5
                                                                           COMP 246
   . 00 150 J=1.2
                                                                           COMP 247
 150 PLHNUR(J.1)=PLHNOM(J.1)/RSEC
                                                                           COMP 248
     CO 170 I=1.NSTEST
                                                                           COMP 269
     11 = 1
                                                                           COMP 250
     DG 160 J=1.3
                                                                           COMP 251
     DO 150 K=U+3
                                                                           COMP 252
     SUMI(II)=STASTG(K.J.I)
                                                                           COMP 253
 160 11=11+1
                                                                           COMP 254
     CALL SYMINV(SUM1.3.3.SUM2)
                                                                           COMP 255
     11 = 1
                                                                           COMP 255
   +.00 170 J=1.3
                                                                           COMP 257
     £0 170 K=4.3
                                                                          - COMP 258
    · STASIG(J+F+I)=SUM1(I1)
                                                                           COMP 259
     STAS16(K...[)=SUM1(I1)
                                                                           COMP 250
 170 [4=[1+1
                                                                           COMP 251
     NSTART=ND1M-2*NMAST
                                                                           COMP 262
    DO 175 I=1.NSTEST
                                      REPRODUCIBILITY OF THE
                                                                           COMP 253
      5TANUS(1,1)=0
                                                                           COMP 254
                                      ORIGINAL PAGE IS POOR
    . STANDS(2+1)=0
                                                                           CDMP 255
 175 STANUS (3.1)=0
                                                                           COMP 266
      LL=0
                                                                           COMP 257
      DU 190 I=1.NMAST
                                                                           COMP 255
 190 LL=LL+1
                                                                           COMP 269
    - NUCLNERUNLUCILL, EST AND, NS TEST, LOCI
                                                                           COMP 270
      IF(NGC(N.EC.0) 60 TO 150
                                                                           COMP 271
      CO 135 K=1.NOCLN
                                                                           COMP 272
      K1=LUC(K)
                                                                           COMP 273
      DU 165 J=1.3
                                                                           COMP: 274
  188 STANUS(J.K1)=3*(I-1)+J+NSTART
                                                                           COMP 275
      TTL(NUTARI43#(1-1)+2)=NAME(LL)
                                                                           COMP 274
  190 CONTINUE
                                                                           COMP 277
      NSTART#RSTART+1
                                                                            COMP 276
  200 IF (NoTA: LI:0) GO TO 300
                                                                            COMP 275
C PRINT STATION PUBLITIONS
```

```
COMP 280
      LINES=0
                                                                             COMP 281
      DG 250 1=1.NSTA
                                                                             COMP 202
      LINES=LINES+1
                                                                             COMP 283
      1F(MUD(LINES, 45), EO. 1) WRITE(DUTP, 10000)
                                                                             COMP 284
      CALL UUTHAD (REAT(I), LATE, LATE, SEAT, 1)
                                                                             COMP 235
      CALL OUT APO (REDN(I) . LONG . LONG . SLOK . I)
                                                                             COMP 286
      IF(MOD(LINES.5).E0.1) WELTE(OUTP.10100)
      WRITE (BUTF. 10200) NAME (I) . ISTANO(I) . LATO. LATM. SLAT. LOND. LONM. SLON. COMP 237
                                                                             COMP 289
         H(1)
                                                                             COMP 259
      IF(1+GT+NSTEST) GO TO 250
                                                                             COMP 290
     AWRITE(GUTF.10300) (PUHNEM(J.I).J=1.3)
                                                                             COMP 291
      WRITE (OUTF.10400)
                                                                             COMP 292
  250 CONTINUE
                                                                             C04P 293
  300 NGP=NOIM-NGFCCM-3*NMAST-NTIDEN
                                                                             CDMP 294
      NSTART=NGF+1
                                                                             COMP 295
      IF (NGPCEN.LE.O) RETURN
                                                                             COMP 296
C LCAD ESTIMATED GEOPOTENTIAL COEFFICIENT INFORMATION INTO VARIABLE
                                                                             COMP 237
C STCHAGE ARRAYS
                                                                             COMP 298
      NGPI=NC3EST~NGPCGM
      DU 506 I=1.NGFCOM
                                                                             COMB Sod
                                                                             COMP 300
      ICS=NUZXCS(I.1)
                                                                             CUMP 301
      N=NDEXC5(1,2)
      M=NCEXCS(1,3)
                                                                             COMP
                                                                                  302
      11=1+NGP1
                                                                             COMP 303
      IndXC3(1,I1) = ICS
                                                                             COMP 304
                                                                             COMP 305
      INDXC5(2.11)=N
                                                                             COMP 305
      INDXCS(3,11)=M
      1. 十时三辆
                                                                             COMP
                                                                                  307
      ITTL=NGP+I
                                                                             COMP 303
      GPNJ(II)=ITTL
                                                                             COMP 309
      TwD=CaD
                                                                             COMP 310
      IF(ICS.EC.2) TWD=SWD
                                                                             COMP 311
                                                                             COMP
      J=N/10
                                                                                  312
                                                                             COMP 313
      11=J#65536
      J=N-10*J
                                                                             COMP 31A
      11=11+J#255
                                                                             CDMP 315
      J=(M-1)/10
                                                                             COMP 316
      11=11+J
                                                                             COMP 317
      J=1577721c=(M-1-10+J)
                                                                             COMP 318
      TwD1(1)=CS(TWD1(1),II)
                                                                             COMP 319
                                         REPRODUCIBILITY OF THE
      TwD1(2)=EA(TwD1(2).J)
                                                                             COMP 320
      SIG=GPSIGN(I)
                                                                             COMP. 321
                                         ORIGINAL PAGE IS POOR
      GPSIG(II)=SIG
                                                                             COMP 322
      TTL( ITTL )=TND
                                                                             COMP 323
      IF(ICS-LI-2) GG TO 500
                                                                             COMP 324
      N=31-N
                                                                             COMP 325
      M=34-M
                                                                             COMP 326
  500 GPVAL(II)=CS(N.M)/SIG
                                                                             COMP 327
      RETURN
                                                                             COMP 328
13000 FURMAT(1h1,42X,19HTRACKING COMFLEMENT/,1H0,12X,7HSTATION,6X,
                                                                             C04P 329
     1
         17HGLCCETIC LATITUDE:6X:14HEAST LONGITUDE:6X:4HSPHERRID :
                                                                             COMP 330
         SHRELCET/1H0.10X.11HNAME NUMBER.5X.2(14HDEG MN SECONDS.8X).
                                                                             COMP 331
         3X: EH(WETERS))
                                                                             COMP 232
10100 FURMAT(1x)
                                                                             COMP 333
10200 FORMAT (10X:A7:E5:EX:2(213:67:3:9X):F11:3)
                                                                             CHMP -3 15
103CG F344AT (1m+,43X,14+,F6,1,17x,14+,F6,1,15X,144,F5,1)
                                                                             COMP. 325
19438 FURNAT (1004468410_4218410_4198416_)
                                                                             COMP 336
                                                                             COMP 337
```





NAME	CONSTS	•	• •		
PURPOSE	INTEGRATOR	STEPSIZE	INPUT/OUTPU' INFORMATION: PARAMETERS	T FILE NUM CONVERSIO	BERS. N
COMMON BLOCKS	CONSTS MONTHS	CPARAM VRELOK	CONGUT	INTBLK	CGEOS

```
CONS
     BLOCK DATA
                                                                              CONS
                                                                                     14
      IMPLICIT REAL *8 (A-H+D-Z)
                                                                                     15
                                                                              CONS
     LUGICAL ICREFT. VARSTP. NORRAT, INITAL, HLVOSW
                                                                                     16
      INTEGER XYZTP. EVTP. SCRA. SCRC. FLTP. PLOTP. DATP. DUTP. GRDTP. ORDER
                                                                              CONS
                                                                                     17
                                                                              CONS
      COUBLE PRECISION LOVE
                                                                                     1 4
                                                                              CONS
      COMMUNICONSTS/DP1.DTWOF1.CRAD.ERSEC
                                                                                     10
                                                                              CONS
      COMMUNICEPARAMINSTAL 19) -
                                                                                     20
                                                                              CONS
      COMMON/CENDUT/MARCS(19)
      COMMONZINTELKZTHOOT1.THOOT2(2).GM.AE.AESQ.F1NV.FS032(18).RPRESS.
                                                                                     21
                                                                              CONS
         INITAL .NORRAT. THETG. FOCIES(6), STEPS2(4), HLVER3(2), CBLER8(2),
                                                                              CONS
                                                                                     22
         CTUL(2),RTCL(2),STPLC+(2).STEPUP(2),CROER(4).ASAT(4).VARSTP(2).CONS
                                                                                     23
                                                                               CONS
                                                                                     24
         HLVDSW(2).NEGN(8).LOVE(3).TEREFT.N80DY
                                                                                     25
                                                                               CONS
      COMMUNIC GEOSTISATIO (24-JHET GO. (12), I GOLA 17)
                                                                                     26
                                                                               CONS
      COMMON/MCNTHS/MONTH(26)
                                                                                     27
                                                                               CONS
      COMMON/VRBLOK/COSLAM(66).1G(2118)
      COMMON/TPEBLK/INTP.OUTP.DATP.XYZTP.KEPTAP.RVTP;PLOTP.IOBS.SCR4.
                                                                               CONS
                                                                                     . 20
                                                                               CONS
                                                                                     20
         SCRC. FLTP. GROTP
                                                                                     30
                                     'HLVERB/2*0.250-4/.
                                                                               CUNS
      DATA STEESZ/4 *1 +00+2/+
                                                                                     31
                                                                               CONS
                                      CTOL/2*0.25D-10/,
           UBLERB/2*0.250-10/.
                                                                               CONS
                                                                                     32
                                      SIPLOW/2*12.5D0/.
           RTJL/2*0.259-7/.
                                                                               CONS
                                                                                     .33
                                      DEDER/4*11/.
           STEPLP/2 * 4.002/.
                                                                               CONS
                                                                                     34
                                      HLVDS#/2#+TPUE./+
           VARSIP/2#4FALSE#/+
                                                                                     35
                                                                               CONS
                                      NCRRAT/.FALSE./.
           TUREFTZ. FALSE. Z.
                                                                               CONS
                                                                                      36
           F5032.ASAT/21*0.000/.
                                      NEGN/8×9/
      DATA INTERDUTPEDATE EXYZTE EXEPT APERVTE PLUTE : IDES : SCRA ; SCRC ;
                                                                                      37
                                                                               CONS
                                                                               CUNS
                                                                                      36
           FLTP.GQDTP/3.6.12.8.9.0.19.20.14.16.13.18/
      LATA MUNTE/0,31.60.91.121.152.132.213.244.274.305.335.366.
                                                                               CONS
                                                                                      39
                  0.31.59.90.120.151.131.212.243.273.394.334.365/
                                                                               CONS
                                                                                      40
                                                                               CONS
                                                                                      4.1
      DATA NSTAZIONOZ
                                                                               CONS
                                                                                      32
      DATA NARCE/15*0/
                                                                               CONS
                                                                                      43.
      CATA NEUCY/2/
C GRAVITATIONAL CONSTANT TIMES MASS OF EARTH IN METERS**3/SECONDS**2
                                                                                      44
                                                                               CONS
                                                                                      45
                                                                               CONS
      DATA GM/2.986C130000+14/+
                                                                               CONS
                                                                                      46
C SEMI-MAJUR AXIS OF PEFERENCE ELLIPSOID IN METERS
                                                                               CONS
                                                                                      47
              ABZ6378155.00/.
                                                                                      4.9
C INVERSE OF FLATTENING OF REFERENCE ELLIPSOID
                                                                               CONS
                                                                               COMS
                                                                                      49
              F1NV/29++25500/+
C RATIUS OF LUNAR, SCLAR, PLANETARY MASSES TO MASS OF EARTH
                                                                               CONS
                                                                                      50
                                                                               CDAS
                                                                                      51
  ...MUUN
                                                                               CONS
                                                                                      :52
         BOD 123/0.1220997171 COE #070+01.
                                                                               CUNS
                                                                                      53
   . .SUV
                                                                               CUNS
                                                                                      5,0
                 0.32294556192643760+664
                                                                               CON3
C ... VERUS
```

```
56
                                                                             CONS
                 0.8150003225334958D+ CO.
                                                                                    57
                                                                             CONS
                                                                                    53
                                                                             CONS
                 0.1074468525270C73D+C0.
                                                                              CUNS
                                                                                    5:
     JUPITER
                                                                                    A C
                                                                              CONS
                 0.31788093030+03.
                                                                              CONS
                                                                                    61
    SATURN .
                                                                              CONS
                                                                                    5.2
                 0.9514905175D+02/
                                                                                    53
C RIGHT ASCUNDION OF GREENWICH AT JAN 0.0 FOR 1958-1975 IN DEGREES
                                                                              CONS
                                                                              CONS
                                                                                    54
      DATA THET(0/99.151441700.98.912725000.98.674006500.
                                                                              CONS
                                                                                    65
                   95.420934700.49.192216500.58.447478600.
                                                                                    55
                                                                              CONS
                   98.704782500,99.451711700,49.212993500,
                                                                              CONS
                                                                                    47
                   98.974276500,98.735559500.59.432439600.
                                                                                    58
                                                                              CUNS
                   95.2437750DC.59.005050166700.39.7663375D0.
                   99.513270833300,99.274554166600.99.03533750000/.
                                                                              CON5
                                                                                    5 Ç
C MEAN ADVANCE IN RT ASC OF GREENWICH PER MEAN SOLAR DAY IN DEGREES
                                                                              CONS
                                                                                    70
                                                                                    71
                                                                              CONS
            THDCT1/. 9856473354D0/.
                                                                              CONS
                                                                                    72
C SCLAR RADIATION PRESSURE IN NEWTONS/METER##2
                                                                              CONS
                                                                                    73
           RPRESSZ. ASD-57
                                                                                    76
                                                                              CONS
C PI IN RACIANS (DOUBLE PRECISION)
                                                                                    ŦĘ
                                                                              CONS
      DATA OPI
                   /2.141592653589793200/.
                                                                              CONS
                                                                                    76
C TWO PI IN RADIANS (DOUBLE PRECISION)
                                                                              CONS
            DTWOFT /6.2831853071795864D0/.
                                                                                    78
                                                                              CONS
C CONVERSION FROM DEGREES TO RADIANS (DOUBLE PRECISION)
                                                                                    ځد
                                                                              CONS
                   /.01745329251994329600/.
C CONVERSION FROM SECONDS OF ARC TO RADIANS (DOUBLE PRECISION)
                                                                              CONS
                                                                                    40
                                                                              CONS
         DRSEC/.454 8 1359 1 10 98360-5/
                                                                              CONS
                                                                                    92
C CONSTANTS FUR SOLID EARTH TIDES
                                                                              CONS
                                                                                    33
            K2
C.
                                                                              CONS
                                                                                    = 6.
      CATA LUVEZO. 25DO.
                                                                              CONS
C
            ĸЗ
                                                                              CONS
                                                                                    جَڇ
              0.000.
                                                                              CONS
                                                                                    37
C
            LAMEDA (PHASE ANGLE - DEGREES)
                                                                              CONS
                                                                                    20
              1000
                                                                                    F C.
                                                                              C0:15
      DATA CUSE/M/0.000.1.000.64.0.000/
                                                                              CONS.
                                                                                    20
      END
```

NAME	CORREL			
PURPOSE	TO COMPUTE AND PRINT CORRELATION COEFFICIENTS FROM THE DIAGONAL AND ABOVE THE DIAGONAL OF A NORMAL MATRIX IN VECTOR FURM			
CALLING SECUENCE	CALL CORREL (SUM1 , NPARAM , NDIM , INNER , TTL)			
SYMBOL TYPE	DESCRIPTION			
SUMI DP	INPUT - INVERTED LEAST SQUARES MATRIX IN VECTOR FORM			
NPARAM 1	INPUT - CRDER OF LEAST SQUARES MATRIX			
NDIM I	INPUT - FIRST DIMENSION OF SQUARE ARRAY EQUIVALENT TO 'SUMI' VECTOR			
INNER I	INPUT - ITERATION NUMBER			
TTL DP (1)	INPUT - CORRELATION PARAMETER TITLE ARRAY			
SCERCUTINES USED	NONE			
CONHON BLOCKS	TPERLK .			
INFUT FILES	NONE			
OUTPUT FILES	OUTP + PRINTER			
•				

	•				
SUBROUTINE CORREL(SUM1.NPARAM.NDIM.INNER.TTL)					
INTEGER CUTP.COL1.COL2	CORF	36			
REAL*8 SUNI(1).TTE(1)	CORR	37			
COMMON/TPECLK/INTP.GUTP.SCRTP(10)					
C COMPUTE CORRELATION COEFFICIENTS					
IF(NPARAM-1)20,10,30	CORR	60			
10	CORR	41			
20 AETURN STORM	CORP	42			
30 DO 2534 I=1.NPAPAM	COPE	4.3			
II=ND1M+(1-1)-((I-1)+I)/24I	CORR	4.A			
SUM1(11)=CSGRT(SUM1(II))	CORR	6.5			
1F(1.TG.NFARAM) GO TO 2532	CORP	46			
11=1+1	CORR	47			
CO 2531 J=11.NPARAM	CORR	42			
1 J = I 1 + J I	CORP	49			
-2521 SUM1(IJ)=SUM1(IJ)/SUM1(II)	COBE	50			
C DIVIDE JFF-DIAGONAL TERMS BY SQUARE FOOT OF ROW AND COLUMN DIAGONAL.	CORR	51			
C TERM	CORF	5.2			
16(1.EC.1) GO TO 2534	CURE	53			
2532 [1=1-1]	COPH	54			
Ji=1	CORP	56			

	•		,
.•	00 2533 J=1+I1	CORP.	56
-	SUM1(JI)=SUM1(JI)/SUM1(II)	CORP	57
2533	U-41 CA+I U=I L	CORR	58
2534	CUNTINUE	CORR	59
C PRINT CURRELATION COEFFICIENTS			
	JSTKT=2	CORR	61
	1STOP=NPAGAM-1	CORP	62
	ISTAT=1	CORR	63
	WRITE(OUTF.10112) INNEF	CORR	6,4
2535	WRITE(UUTF,10214) (TTL(I),I=JSTAT,NPARAM)	CORR	55
•	DO 2536 1-1.15TOP	CORP	6.6
	11=NUIN#(1-1)-(1*(1-1))/2+1+15TRT	CORF	67
	CUL1=1STR1+1	CORR	63
	CUL2=MINC(COL1+19,MPARAM)	CORR	59
	12=11+CCL2-CCL1	CORR	70
253c	wRitc(Coff,10215) TTL(1),(SUM1(J),J=11,12)	CORR	71
•	JSTRT=JSTRT+20	CORF	72
	IF(JSTRT.GT.NFAPAM) RETURN	CORR	73
	ISTUP=151CP-20	CORR	74
	1817TE1818T+20	CORR	75
	GO TO 2535	CORR	76
10112	FURNAT (1HC. 5X.71HCGRRELATION CCEFFICIENTS FOR ADJUSTED PARAMETERS	CORR	77
•	ARTER ITERATION NUMBER (13)	CORP	78
10214	FORMAT (1FC+6X+20A6/(7X+20A6))	CORP	77
10215	FURMAT (1+C,A6,2CFF,3)	CORP	26
	END	CORR	81

COWCOF

DESCRIPTION

COWCOF assigns predictor or corrector coefficients for the integrator depending on the order requested. Permissible orders are five through fifteen.

```
COVCOR
   NAME
   PURPOSE
                      TO ASSIGN INTEGRATOR COEFFICIENT VALUES -
                      ORDERS 5 - 15
                      CALL COWCOF (POS. VEL. FORDER, IRC)
   CALLING SEQUENCE
      SYMBOL
               TYPE
                      DESCRIPTION
     POS
               DP
                      CUTPUT - VECTOR OF POSITION COEFFICIENTS
      (1)
               DP
                      DUTPUT - VECTOR OF VELOCITY COEFFICIENTS
      VEL.
      (1)
      I DRIDER
                      INPUT - CFDER
      1 PC
                      INPUT - PREDICTOR/CORRECTOR SELECTION SWITCH
   SUBROUTINES USED
                      NONE
                                          REPRODUCIBILITY OF THE
   CCHMON BLUCKS
                      NONE
                                          ORIGINAL PAGE IS POOR
   INFUT FILES
                      ทอก่≘
SEROUMPUT FILES
                      FRINTER -- 6
```

```
SUBROUTING CONCOP(POS, VEL, IORDER, IPC)
                                                                        COXC
                                                                              31
                                                                        CORC
.IMPLICIT REAL*2 (A-F+O-Z) .
                                                                              32
 CIMENSION POS(1), VFL(1)
                                                                        COXC
                                                                              33
 CIMENSION BETA(99), BETAS(99), ALPHA(99), ALPHAS(99)
                                                                        COWC
 DIMENSION 35(4):B6(5):F7(6):B2(7):39(8):B10(9):B11(10):B12(11):
                                                                              35
                                                                        COMC
    b13(12),B14(13),B15(14),BS5(4),B5(6),B7(6),B53(7),BS9(B),
                                                                        COWC
    B$10(;),B$11(10),B$12(11),B$13(12),B$14(13),5$15(14)
                                                                        COWC
                                                                              37
 DIMENSION A5(4).A6(5).A7(6).A3(7).A9(3).A10(3).A11(10).A12(11).
                                                                        COWC
                                                                              30
    A15(12), 414(13), A15(14), A55(4), A36(5), A87(5), A85(7), A80(3),
                                                                        COMC
                                                                              39
    A510(5).A511(10).A512(11).A513(12).A514(13).A515(14)
                                                                        CUMC
                                                                              40
 EUVIVALENCE (85(1):3ETA(1)):(86(1):8ETA(8)):(8761):8ETA(10));
                                                                        COWC
                                                                              41
     (33(1).2FTA(16)),(89(1).UETA(23)).(210(1).3ETA(31)).
                                                                        COKC
                                                                              42
     (311(1).8ETA(40)).(812(1).SETA(50)).(812(1).SETA(61)).
                                                                        COKC
                                                                              13
     (B14(1),RET4(73)),(815(1),SET4(86))
                                                                        COWC
                                                                              44
 EGUIVACENCE (535(1), HETAS(1)), (358(1), BETAS(5)),
                                                                        COYC
                                                                              45
     (357(1), PETAS(10)), (MSS(1), ESTAS(16)), (859(1), WETAS(23)),
                                                                        COWC
                                                                              16
     (Bolv(1):85TAS(31)):(BS11(1):35TAS(40)):(B512(1):85TAS(50));
                                                                        COXC
                                                                              47
     (B513(1)+86TA5(611)+(B$14(1)+35TAS(73))+(B515(1)+BSTAS(86))
                                                                        COMC
                                                                              3.8
 EQUIVACENCE (A5(1), ALPHA(1)), (A6(1), ALPHA(5)), (A7(1), ALPHA(10)),
                                                                        CUXC
                                                                              30
     (AU(1),ALPEA(16)),(AF(1),ALPHA(23)),(A10(1),ALFHA(31)),
                                                                        COVC
                                                                              5 C
     (All(1), ALPHA(40)), (Al2(1), ZLPHA(50)), (Al3(1), ZLPHA(c1)),
                                                                        COVC
                                                                               31
     (A14(1),ALPHA(73)),(A15(1),ALPHA(65))
                                                                        COWC
                                                                              52
 &QUIVALENCE (ASS(1),ALPHAS(1)).(ASS(1).ALPHAS(5)).
                                                                        COWC
                                                                              33
     (AS7(1),ACPHAS(12)),(AS1(1),ACPHAS(1:1),(AS9(1),ACPHAS(23)),
                                                                        CURC
     {A510(1),ALPHA5(31)),{A511(1),ACPHA5(40),AD1),{A312(1),ALPHAS(50)),chwc
```

```
(AS13(1), ALPHAS(61)), (AS14(1), ALPHAS(73)), (AS15(1), ÅLPHAS(86)) COWC
                                                                            56
                                                                            57
  K = (ICRDER-5) * (ICRDER+2) / 2
                                                                            50.
     185/4:1640277777777777779+01: -:221249559999999990+01:
                                                                     COVC
                                                                            50
                                                                     COVC
CATA
          t.1420833732233333353D+01.-.34661111111111111110D+00/
                                                                            50
      B5/+.19701399998888888880+01. -.3521946446446%64440+01.
                                                                     COWC
                                                                            61
          +.33979999999999990+01,-.1660055555555555550+01.
                                                                      COKC
CATA
                                                                            62
                                                                      COWC
           +.3298611111111111111C+CO/
                                                                            63
      U7/1.22257308201C552C1CD+01. -.5109904100529100520+01.
                                                                      COMC
                                                                            61.
          _+.655591931216931216C+01.-.4823974857724U6772D+01.
DATA
                                                                      COMC
                                                                            65
          +.190732076719576719C+01,-,315591931216931216D+00/
                                                                      CDWC
                                                                            55
      88/+.258993535714285714D+01. -.693523132275132275D+01.
                                                                      CHAIC
                                                                      COWC
                                                                            67
CATA
           +•111192373677243677C+02.--1090346360346560840+02.
                                                                            6 P
           +•647118882275132274C+01.-.2140939153439153430+01.
                                                                      COVC
                                                                            69
                                                                      COWC
           +.3C4 224 537037037036C+00/
                                                                            70
      89/4.2864623357523774240+01. +.3999327325837742500+01.
                                                                      COVC
                                                                            71
DATA
           +•173115153769641259E+02.--2122384552339770720+02.
                                                                      CORC
                                                                      こりゃこ
                                                                            72
           +.167915696361624214C+02.-.8333167162698412690+01.
                                                                            73
           +.235830054012345578C+01.-.2948630004409171070+00/
                                                                      COMC
BATA B107++3171798804012345570+01. -+1129513039726531390+02+
                                                                      CUMC
                                                                            74.
                                                                             75
           +.2E346/279769641269C+02.-.3729947052339770710+02.
                                                                      COKC
                                                                             76
           +.3657965000818542140+02;-.2440379816859831860+02;
                                                                      COWC
                                                                             --
           +.104036130401234567C+02; -.259067157186943353D+01;
                                                                      COMC
                                                                             78
                                                                      COWC
           +.226975¢46423571423C+C0/
                                                                             7Ç
DATA B117++34519654004562F2350+01. -+1301533726526174449+02+
                                                                      CONC
          .+.3543355334856584696+02.-.6063539672513539190+02.
                                                                             30
                                                                      COMC
                                                                             81
                                                                      COWC
           +.7216373924C1194454C+02,-.597073313146344396D+02.
           +.3293,53391414141414161402,4%1026774970A385121050+02.
                                                                             32
                                                                      COMC
                                                                             33
           +.250865131442400192C+01,-.230139596443936721D+00/
                                                                      COWC
 BATA B12/4.3726253940487861450+01. -.155594026555777349D+02.
                                                                      COMC
                                                                             95
           +,4777560265C3678065C+02,+,937472315257802789D+02;
                                                                       COKC
           +•12;779502646755250C+03.--•12;8225974025,74020+03;
                                                                             34
                                                                       CONC
           +.91535302548C495439C+02.-.4557335184764309768+02.
                                                                             117
                                                                       だいかく
           +#151505311168459595C+02+-#3022844995759927310+01+
                                                                       COV.C
                                                                             88
                                                                       COWC
                                                                             ВÇ
            +.2742f5540031540039C+00/
 CATA d1374.3095232737261500230401. -.19513900096002737150+02.
                                                                       COWC
                                                                             90
           +.6257218322293845910+02.-.1381379212466323260+03.
                                                                             o 1
                                                                       CONC
                                                                             92
                                                                       COWC
            +.218559022Je2059346E+03,-.253113924612023136J+03.
            +,215026c2975747FE77C+33,-,1343538812329471930+03,
                                                                       CONC
                                                                             93
            +.5454039033749000736+02,-.1731943156931060990+02,
                                                                       CAMC
                                                                             414
            +.3233592354541735570+01.-.2570238467736437740+00/
                                                                       COMC
                                                                             95
 DATA B11/4.4259634135528136730+017 -.2259102616048714960+02,
                                                                       CUAC
                                                                             96
                                                                       COVIC
            +*800193752151345187C+C2+-*1762943174372857580+03+
                                                                              26
            +.34941293952352456.00+03+-.4624301925133754920+03.
                                                                       COVC
            +.4600572756482200920+03.-.343735149139299548D+03.
                                                                       COXC
            +.190394308274968229C+02,-.75975728209R690419D+02.
                                                                       CD%C 100
            +. 208@377184673776518:02.-.344124532717292538D+01.
                                                                       CONC. 101
                                                                       COWC 102
            4.2543513493666Cb509C+C0/
 DATA DIDZ+.A519770531786737770+01. -.2607373931014596310+02.
                                                                       COWC 103
            +,100310017117057339C+03+-,2706733271757756550+03<sub>1</sub>
                                                                       COMC 100
            +.535A1CA627647647C9C+C3.-.75727573533A5980260+03.
                                                                        CDWC 105
            +.9C54+1T31403183471C+C3,--.7%012320454%2623270+03.
                                                                        CORC 105
            +.6251596500511507646+32,-.2519742614411987830+03,
                                                                        CD#C 197
            4.5507979113523156170+02.-.2373139392512580770+02.
                                                                        CONC 108
            +.3645124453025415455+01.-.2501353961275019369+00/
                                                                        COXC 109
  CATA EDD/4.34 68111111111111111100+00. +.246833333333333333330+00.
                                                                        CDWC 110
            --12055333773353323373D+00.+.203687.38553963398D-01/
                                                                        CD8C 111
```

```
COWC 112
DATA 655/4.3298611111111111110400. +.32093333333333333330+00;
                                                                     COMC 11™
          -- 23333333333333335+00.+.10139938889888998880+00,
                                                                     COWC 114
          -.187499999999999999C-01/
                                                                     COWC 115
CATA 657/4.3155010312169312160+00. +63921797328042323040+00.
                                                                     CDWC 116
          +,37602513227512227&C+00,+,244070637839637J300+00,
                                                                     CDWC 117
          --9 CC9585 947 CES$47 C7C-01,++14263173 39417939410-01/
                                                                     COWC 112
DATA BS8/+.3042245370370370360+00. +.4603335978935778830+00.
                                                                     CONC 119
          -.5465360AAG735A4G73C+00.+.471623571A23571429D+00.
                                                                     COWC 120
         --.260606812165312169C+00.+.3247354497354497349-01.
                                                                     COWC 121
          +a.113673941796941799E-01/
                                                                     COXC
                                                                          122
DATA 85974.2948650004409171070+00. +.5258773540964373390+00.
                                                                     COXC 123
          -•743023313492063A91E+00.+•79349373E229275B9580+00.
                                                                     COLC
                                                                          124
          -.5820655930335C9699C+00.+,273950313492053%910+00.
                                                                     CO&C 125
          -.7€0631503527336859C-01.+.9355535576119729440-02/
                                                                     COMC
                                                                          126
DATA 8510/4.2569754464285714280+00.+.5000107851552028210+00.
                                                                     COVC
                                                                          12
          -.964014225337,7425C4D+00.+.124037037633412695D+01.
                                                                          125
          -.114056437369770723C+01,+.72094383813342151aD+00;
                                                                     COKC
                                                                          125
                                                                     COVC
          -,297554562698412698C+00,+,7249355359438536140-01,
                                                                          170
                                                                     COMC
          -.780255401234567900E-02/
                                                                     CONC
                                                                          131
DATA 6511/+.2801848964439367210+00.+.6500921350159151820+00.
                                                                     COMC
          -.1200305428254691940+01,+,1210901775693442350+01,
                                                                     OWED
                                                                          133
          -.199553147t9A168029D+01.+.15757500936247394580+01.
                                                                     CORC
                                                                          134
          ֥ 6678660614077280738+00,+*31673755814173A308D+00,
                                                                     COMO
                                                                          135
          -.6596520387405504C6C-01.+.678534993453470685D-02/
                                                                     COWC 135
DATA 8312/+.2742555400315590598+00.+.7093330001402913050+00.
                                                                          137
          ₩ .1 $74687565939786750#01.4.2521719845173961930+01.
                                                                     C \cup A \subset C
                                                                      2076 138
          -, ig3953331355258938D+61,+,306842315215643543D+01,
                                                                     CO YC 139
          --211191790799863716C+01,+-102767433762223428D+01.
          -.325547742423252645D+00.+.650264141030113301D-01.
                                                                     COWC 140
           -.592A05641233766233C-02/
                                                                     COWC 141
DATA &$127+42690256467736487750+00++47669366259777449420+00.
                                                                      CO#C 142
          -.176290609302706243D+01.+.335534273273575387D+01.
                                                                      CORC 14-3
           --4¢66774209367618345C+01,+.5433175437329517130+01,
                                                                      CORC 100
           +.453127019317166556C+01.+.270570311274834335D+01.
                                                                    CUMC 14.5
           -.1199602129591049338+01.+.3540445432932770030+00.
                                                                      CONC 146
           ++6352763224979C79T9C-01++*5276523237930235060-02/
                                                                      CONC. 167
DATA .65147+.2643513433666065090+00.+.823014-00-8422521160+00.
                                                                      CONC. 148
           -.207162093769164109C+01,+.441A+38632235057060+01,
                                                                      COXC 159
           -.726310380516210439E+01.+.919275417570699057D+01.
                                                                    CUMC 130
           -.855327372127372127C+01.+.516035185112332185J+01.
                                                                      COWC 151
           -.351A963361A76970815+01.+.138303419234457520D+01.
                                                                      CURC 152
           -.372242577114 E802 55C+00.+.613666741424574592D-01.
                                                                      CO%C 153
                                                                      COWC 154
           -- 1677433 107 042 26 45 1 0-02/
DATA 631E/+.2601363961276010360+00.+.2776309359693232630+00.
                                                                      C040 155
                                                                      CONC 156
           -. 240030726252425277C+01.+.5\2035392254052230D+01.
                                                                      GG #G 157
           --1029679465605101740192. • 1461739770730703420+92.
                                                                      COVC 158
           -.1509513575341211265+02.+.15-532198932557132D+02.
                                                                      C3#C 159
           -,ag39507373C77C1427C+01.+.43U57E500373348d29D+01.
           --157771F9174701/549C+01,+.3~013250J734634J410+00.
                                                                      COYC 155
           --- 59471 17751411 201160-01, + - 4214 152239305472850-02/
                                                                      CDWC 151
       A5/4. 2453333322332333330+00. -. 2016-1666465566650+00.
                                                                      COAC
                                                                           . . . .
LATA
           4.79166666666666666670-01.+0.0330/
                                                                      COLC
                                                                           143
       CHIC
                                                                           100
 CATA
           #.30:15n59n54p64b64b64n0+000.--#715407999999999999001#
                                                                      CONC
                                                                           まらだ
                                                                      COMC
                                                                           - -
           40.000Z
       AV / + 3 = 217 + 2 3 2 9 0 A 2 3 2 H OK D + OU . - - TUPO - OR CA 3 3 3 2 6 4 5 4 9 D + OU .
                                                                      ていべい さんつ
 LATA
```

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR δ , δ - ($| \phi$

```
COWC 168
          +.722242363492063491C+00.-.360333597333597883D+00.
                                                                  CDWC 169
          +.71345399A7C295A7C8D-01.+0.0D0/
                                                                  COWC 170.
     AB/(.4602835978835978830+00. -.109307208994708994D+01.
                                                                  COWC 171
        **141423571425571423C+01***104242724357724367D+01*
                                                                  COWC 172
          +a4 12367724867724867C+00,-.632043650793650792D-01.
                                                                  COWC 173
          +0.000/
                                                                  CONC 174
      A9/4.5253733540564373890+00. ~.1496046626934126980+01.
         +,239672205687930667D+01,-,235234237213403879D+01,
                                                                  COWC 175
                                                                  COWC 176
          +.139430406746031745D+01.-.461173902113402116D+00.
         *+.554957561728395060C-01,+0.000/
                                                                  COWC 177
                                                                  COWC 178
DATA A10/4:5390197861552028210+00: -.192802963167548500D+01:
                                                                  COWC 179
         +.3722671130962300950+01.-.456225749559082992D+01.
          +.3C0471913091710758C+01.-.173712797619C47619D+01.
                                                                  COWC 180
                                                                  COWC 181
          +.507478780864197530C+00,-.631404320987654320D-01.
                                                                  COWC 182
          +0.0D0/
    A11/++6500924360169151820400. - . 2416610350559183890+01.
                                                                  CDWC 153
                                                                  CDWC 134
          +.5432705327090327070+01,-.7982325887846721170+01.
                                                                  COWC 135
          +.787980463123697239C+01,-.52C719636344636344D+01,
                                                                  COWC 186
          +.2217312976992143650+01.-.5517216309924643250+00. -
                                                                  COWC 137
          +,610725498617123616E-C1.+U.0D0/
                                                                  COWC 138
GATA A12/+.7053330001402915050400. -.2949775327679573510+01.
                                                                  COWC 199
          +.7565365635521565510+01.-.1255853327421035750+02.
                                                                  CORC 190
          +.1534411576C7824274C+02.-.125715074479918229D+02.
                                                                  COWC 191
          +.7193720363355720C1E+01,-.2534331939+3402276D+01,
                                                                  COWC 192
          +.5$4237726972101971C+UC:-.5y2405641233765233D-01;
                                                                  COWC 193
          +9.CD0/
                                                                  COWC 19A
QATA A13/467666356258777486420+80, --35525312146054104960+01.
                                                                  COWC 195
          +.1018782379720727688432.-.19379753374794733888+92+
                                                                  COWC 196
          +.274403771366475859C+02,-.271875211590300131D+02.
          +.192904F17892209395C+C2.-.9336H17039928399C4J+01.
                                                                  CDWC 197
                                                                  COWC .198
          +.3105400339657473C7C+01.-.635276822497907980D+00.
                                                                  COWC 199
          +.576036258374531355C-01.+0.000/
DATA A1474.3230656068622521160+00. -.4113241975732693780+01.
                                                                  COWC 200
          +-1224467774665517110+02.--2913241522054341750+02.
                                                                  CUMC 201
          +.4596377087653496340402.-.5311957232757232760+02.
                                                                  CO#C 202
          + act2225329578632530C+02,-a2311371073131576650+02.
                                                                  COWC 203
          +.1244784773560117630+02.-.3722425771145602550+01.
                                                                  COMC SGV
          +.675033415567032031C+00.-.5512798065450717410-01.
                                                                  COWC 205
                                                                  COWC 206
          +0+000/
                                                                  CDWC 207
DATA A1524:3778609859593232630+00: -:48300774525058537550+01:
          +,1686110576792186695+02;-,4116717862420406999+02;
                                                                  COMC SOF
                                                                  CDWC 209
          +.730869886365351712C+02.-.9551532058047257620+02.
                                                                  COMC 510
          +.958525392527969529C+02:-:715158547845161150D+02:
          +.395710653936013946C+02.-.157771391747014549D+02.
                                                                  CDWC 211
          +.429165243673372775C+01.-.713~>2530163350339D+00.
                                                                  COWC 212
                                                                  COWC 213
          4.5475137 G1070711471E-01.+ 0.JD0/
CATA ASSZ::79165566666666666650101: +:83173333333333333330-02:
                                                                  COWC 214
          -. 4166c6c556665f6655E-02.+0.000/
                                                                  COWC 215
COMC SIR
          COWC 217
          +9.CD0/
                                                                  COWC 21F
DATA A57/4.7134559947684947090-91. +.354437356497354496D-01.
                                                                  CUWC 219
          -.3859126744125994127-01,+.1478335478305478305-01,
                                                                  COWC 220
          -.385410052910092509E+02.+0.000/
                                                                  CDWC 221
CATA ASSZERO 2007265.07 4265.07920-01 . + $1157407 +0740740730-01 .
                                                                  COVC 222
          −。7000661375661375650−01:+*==015341749331257530−01;
                                                                  COKC 223
```

```
COWC 224
              --1936177248677248670-01,+-3141534391534391530-02;
                                                                         C'3'YC 225
              +0.000/
                                                                         COAC
                                                                             226
   DATA, AS9/+.654957561726395060D-01. +.671030603465608465D-01.
                                                                         CONC
                                                                              227
              -.110635747350457354C+00.+.104370590328524162D+00.
                                                                         OWC
                                                                             225
              -- 559909060346560846E-01.+.1939314763058783060-01.
                                                                         COWC
                                                                             220
              ---270850890652557319C-02++0+0D0/ -
                                                                              230
                                                                         COWC
   DATA AS10/+.6314043209876843200-01.+.8389532936507936500-01.
                                                                         COMC
                                                                             231

→ a 1600975529100529090+00.+ • 150806733421515754D+00.

                                                                         COWC 232
              -- 142427243677243677C+00.+ +685549933362433862D-01.
                                                                         CDWC 233
              -a191958774250440916D-01.+a2355324074074074074070-02.
                                                                         COWC 234
                                                                         COWC 235
   DATA A511/+.610726498617123616C-01.+.100433537261503928D+00.
                                                                         COWC 236
              -. 217995455547539930C+00, +.30250273369648C696D+00.
              -.287172005270963604C+00,+.16465C798861215327D+00.
                                                                         COXC 237
                                                                         COWC 238
              -.7709378005253006246-01.+.155975819704985371D-01.
                                                                        C34C 536
              -.206778223705307033C-02.+0.0D0/
   DATA A512/4.5524056412337662330-01,+.116927358905525573D+00.
                                                                         COWC 240
                                                                         COWC 201
              -.283930542127625450C+C0,+,435457740715630716D+00,
                                                                         COXC 242
              -.5190148083C1264834U+CO.+.415493601691513357D+OO.
                                                                         COWC 243
              ---230988982082732082C+00.+.8435265855058521710-01.
              -.165855538820747153C-01,+.183201573833573333D-02.
                                                                         COWC 266
                                                                         CDWC 245
              +0.CD0/
   DATA AS13/+.5760352533745213560-01.+.132296741765769449D+00.
                                                                         COWC 265
              -.3576127649901824C4C+CO.+.652930535027509232D+00.
                                                                         COWC 207
                                                                         CDWC 248
              -.861771743345159039C+00,+.8270U20407442372430+00,
              -.574745022123664457É+00.+.28128523623614037340+00.
                                                                         COWC 249
              - 6922187767466316592C-C1.+.1c20146859757061470-01.
                                                                         COVC 250
              -.163693828592348764C-02.+0.000/
                                                                         COWC 231
   DATA AS14/+.56125-5003450717410-01.+.1475063352481660260+00.
                                                                         COWC 252
              -.438663237406210289D+00,+.89600319622635923330+00,
                                                                         CONC. 253
              -.134807468281734631C+C1.+.13C8326013005271470+01.
                                                                         COWC 25A
              -.125556999039769372D+01,+.767553397333571343D+00.
                                                                         dowa 255
              -.3353701939847153130+00.+.9525134100959849960-01.
                                                                         COWC 256
              -.1784703276832905450-01.+.1473544952945951540-02.
                                                                         CONC 257
                                                                       . COVC 258
              +0.CD0/
    DATA AS15/+.5479437310707114710-01.+.155534057577398350D+00.
                                                                         COWC BES
              +.526912934716960074C+00.+.114991434329951493D+01.
                                                                         CONC 250
                                                                         COWC 261
              -.20091975626/519973F+01:+.25t662252573450439D+01:
              -.245966503273258771C+01.+.1 125384705052904460+01.
                                                                         CDWC 262
                                                                         COWC 263
              -.9564930738155437030+C0.+.3030343320455244500+00.
                                                                         COWC 254
              -- 1 059 $675007910( 349 C+00 + + 175003662821732361D-01 +
                                                                         COWC 255
              --1335601777436027345-02++0+300/
                                                                         COWC 266
    IF(10A0EA.GT.15.5R.10R0ER.LT.5) GO TO 400
                                                                         COWC 267
    INUEX= (([CRDER-5]#([ORDER+2])/2
   L=IORUER-2
                                                                         COWC 269
    LP1=L+1
                                                                         COMC 269
    IF(IPC.EC.11GC TO 100
                                       REPRODUCIBILITY OF THE
                                                                         COWC
                                                                              270
    IF (IPC .NE .D) GU TO 200
                                                                         COWC 271
                                       ORIGINAL PAGE IS POOR
    CO 10 I=1.L
                                                                         CONC 272
    PUS(I) = ALMHAS(INOFX+I)
                                                                         COKC 273
    Val(1) #BETAS(INDEX+I)
                                                                         COWC 274
 10 CENTINUE "
                                                                         COWC 275
    VEL(LP1) = 6ETAS(INDEX+LP1)
                                                                         COWC 276
                                                                         COWC 277
    KETUKN
100 CC 110 T=1.E
                                                                         COWC 278
    FUSCI) = ALFHA (1500X+T)
                                                                         COWC 275
```

	•		CONC	240
	VEL(I)=SETA (INDEX+I)	•		
	CONTINUE		COMC	
			COWC	232
	VEL(LP1) = EETA (INDEX+LF1)		COWC	283
	RETURN		COWC	
200	#KITE(6,300)IFC	3.ccf()		
300	FORMAT(111. * PERMISSIBLE VALUES OF IPC APE O AND 1. VALUE F	43360	COWC	
`*	ASP.GIO.O.4 *****RUN TERMINATEC*******)			
	GU TU 1000		COMC.	
	•		COWC	288
400	WRITE(6.500) ICRDER FORMAT(1H1.4PERMISSIBLE VALUES OF LORDER ARE 5 THROUGH 15.	VALUE	PCONC	2.00
500	FORMAT (THI, PERMISSIBLE VALUES OF TERRET ARE STANDOWN TO		CONC	
•	ASSED WAS * + G1C+0+ * #####RUN TERMINATED##### * }			
1000	STOP poet 6		COMC	
	ENIX		CÓMC	292

COWELL

DESCRIPTION

COWELL is the integration subroutine in GEODYN. It integrates the satellite equations of motion and the variational equations. COWELL features a second order predictor-corrector method with variable stepsize. The order of the integrator is also optional.

The integration procedure is not self-starting. The starting procedure consists of initializing logic and data arrays, using START to obtain the requisite back balues. F is also invoked to evaluate the accelerations; VEVAL is invoked to evaluate the variational equations.

The order of computation for normal processing is as follows:

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

- Predict position. Predict velocity if drag perturbations present.
- Correct position and velocity at least once, twice if necessary.
- Evaluate (integrated) variational partials based on corrected values for position and velocity.
- Check for decreasing or increasing of stepsize and update tables of back values. If necessary call REARG to increase or decrease stepsize.
- If the time of interest has not been reached, start processing cycle over for the next stop. Otherwise, processing has completed and control is returned to the calling routine.

,		
NAME '		CONTLL
PULPOSE .		TO SUM COMEEL INTEGRATOR WHICH INTEGRATES SATELLITE EQUATIONS OF MOTION AND ALL FORCE MODEL PARTIAL DERIVATIVES TO DESIRED TIME (DAY)
CALILING SE	GUENCE	CALL COWELL (DAY.).FCT. IOPDER:H,TIM.SJM.VAR.FAC:N. NN.ISAT.PP.P.CC.C.VGC.VC)
SYMUOL	TYFE	DESCRIPTION
DAY	DF	INPUT - DESIRED CUTPUT TIME
Y (6:1)	DP	INPUT - ARRAY CONTAINING SATELLITE PUSITION 6 VELOCITY AND FURCE MODEL PARTIALS, AN OUTPUT ARRAY FROM INTERPOLATOR
FCT (3.1)	DP	INPUT & DUTPUT - BACK VALUE AFRAY OF ACCELERATIONS
IUROER (2)	I	INPUT - AFRAY OF INTEGRATION ORDER FOR ORBIT AND PARTIALS
H (2)	DF	INPUT - AFRAY OF STEP SIZES FOR ORBIT AND PARTIALS
TIM (2)	OF .	INPUT - ARRAY OF INTEGRATION TIMES OF ORBIT AND PARTIALS
SUM. (2,3,1)	DF	INPUT - ARRAY CONTAINING SUMS USED BY INTEGRATOR AND INTERPOLATOR
· VAR	L	INPUT - VARIABLE STEP SHITCH
fai	SF.	INPUT - = +1 IF FORWARD = -1 IF EACKWARD
M . (2)	1	INPUT - DISPLACEMENT ARRAY USED BY INTEGRATOR
NN	1	INPUT - NUMBER OF EQUATIONS
I SAT	1	INPUT - SATELLITE NUMBER
(1)	96	INPUT - PESITION PREDICTOR COEFFICIENTS
e (1)	JF	IMPUT - VELOCITY PREDICTOR COMEFFICIENTS .
CC (1)	UP .	INPUT - POSITION COPRECTION CHEFFICIENTS
· (1)	ರಿಕ	INPUT - VELECITY CORRECTION COEFFICIENTS

```
INPUT - VARIATIONAL PARTIAL CORRECTUR COEFFICIENTS
  VCC
  (1)
                  INPUT - VARIATION PARTIAL FIRST TIME DERIVATIVE
  V C
                           CORRECTOR COEFFICIENTS
   (1)
                                                                 CLEAR
                                                     REARG
                              START
SUBROUTINGS USED
                  COWCOF
                                          DNVERT
                              VEVAL
                   INTRP
                                                     CTIME
                                          CELEM
                              TAMV
                   INTRLK
CEPMEN BLOCKS
                   BYON
INFUT FILES
                  PRINTER.
CUTPUT FILES
                   GEODYN SYSTEMS DESCRIPTION
REFERENCES
                   VOLUME 1 - GEODYN DOCUMENTATION
```

```
36
     SUBRUUTINE COMELLIDAY. Y. FCT. TUFDEF. H. TIM. SUM. VAR. FAC. M. NN. ISAT.
                                                                              COME
                                                                                     79
                                                                              COWE
       PP.P.CC.C.VCC.VC)
                                                                                     30
                                                                              COME
      IMPLICIT REAL#2(A+H+O+Z)
                                                                                     81
                                                                              COME
     DIMENSION SUR(2.3.1).AUX(6).ECCN(11).FCT(3.1).H(2).T1M(2).
                                                                              COME
                                                                                     82
                      SEP (1) - CCLE-PP ( L) - CCGLE-VCCLE-VCC(1) -PC(3)
   ~ ~~ Y(c,1),
     INTEGER ICPOSE(3), W(2), KHAT(2)/2*0/.KGUNT2(8)/8*0/
                                                                                     3.3
                                                                              COME
                                                                              COME
                                                                                     64
      LUGICAL INITAL, FEVAL, NCOR AG, VAF, HLVDSW
                                                                              COME
                                                                                     35
      LUGICAL FEVAL/.TRUE./.STRTP(2)
                                                                                     86
                                                                              COME
      LUGICAL NERHAT
                                                                                     3.7
                                                                              CORE
      LATA ECCN/.0500..05263157900.
                                                                                     85
                                                                              COME
        .0487213100..04403244500.
                                                                              COWE
                                                                                     n \subset
      . .03,71313130..03596147600.
        • 03274E94000•• 02999446500•
                                                                              CONE
                                                                                     30
                                                                              COME
                                                                                     91
        .02763265100..02558250300.
                                                                               COME
                                                                                     φ2
      ..02375460200/
                                                                                     93
                                                                               COME
      EQUIVALENCE(PC1,PC(1)),(PC2,PC(2)),(PC3,PC(3))
      EQUIVALENCE(AUX(1).40X1).(E)XUA).(E)XUA).(E)XUA)
                                                                               こりみに
      CCMMUNZINTPLKZLG2(30).E(2).LG4(18).INITAL.NURRAT.LG3(14).
                                                                               COME
                                                                                     95
                                                                               CONE
                                                                                     26
        STEPSZ(4) . HLVER8(2) .
                                                                               COME
                                                                                     97
        UBLERE(2),CTCL(2).
        RTUL(21.STEPLO(2).STPUP(2).WSAT(14).HLVDSW(2).LOVE(16)
                                                                               CONE
                                                                                     99
                                                                               COWE
                                                                                     00
      CUMMUNIVATIVEMATRX(3.5).S(6.6).LYT(18)
                                                                               COME
                                                                                    100
      CUMMUNICELEMINELEMINT(6,2), TORREL(20)
                                                                               COME
                                                                                   101
      CUMMUNICTIME/DATAER(2).DAYO.ISTP(17)
                                                                               COME 102
C INITIALIZE
                                                                               COWE 103
      NUJRAGEE (ISAT).GT.0.DO
                                                                               COWE 194
      IUNURI = ICFOGR(1)
                                                                               COME
                                                                                    105
      138382=1CF01# (2)
                                                                               COWE
                                                                                    105
      IDILI=IONOGI-I
                                                                               COVE
                                                                                    107
      10162=10161-1
                                                                               CDXE
                                                                                    198
      M1=%(1)
                                                                               COKE
                                                                                    100
      M2=8(2)
                                                                               COME 110
      MIP1 = M1+1
                                                                               COME 111
      1111 = 1.1+2
```

0 0 199

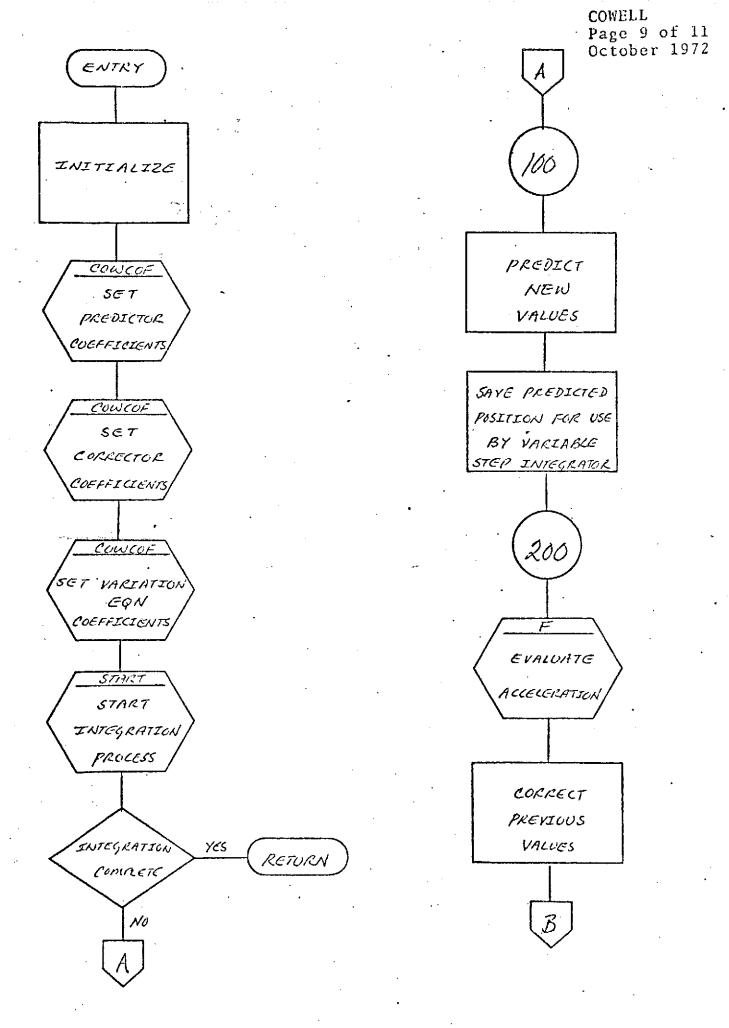
```
M2P1=M2+1
                                                                               COWE 113
      · 1F(NN.60.1)GO TO 3
                                                                               CONE 114
       102L1=10+088-1
                                                                               CORE 115
       IU2L2=IUFER2-2
                                                                               CONE 116
     2 IF(INITAL)GD TO 4
                                                                               COVE 117
       IF (NN. UT . 1) GO TO 260
                                                                               COME 118
       GU TU 10C
                                                                               COWE -119
     4 INITAL = . FALSE .
                                                                               CONE 120
       KOUNT (ISAT) = ICILI
                                                                               COVE 131
       M2=0
                                                                               COME 122
       M(1) = 1C1L1
                                                                               CORE 123
       1F(NN.=G.1) GC TO 18
                                                                               CJF 124
       IF(IURDA2.GT.ICRDR1) ICRDR2=IORDR1
                                                                               CORE 125
       10261=1360R2-1
                                                                               COWE 126
       IU2L2=IC2L1-1
                                                                               CORE 127
       KOUNTŽ(ISAT)=102L1
                                                                               COWE 128
       112LI=142LI
                                                                               C3#E 129
    18 IF( NUT. VAR) GO TO 20
                                                                               COWE 139
       M(1) = M(1) + M(1) - 1
                                                                               COME 131
       IF (NN+GT+1) x(2) = x(2) + x(2) +1
                                                                               CUFF 132
    20 CUNTINUE
                                                                               C3#E 133
       M1=M(1)
                                                                               COME 134
        M2=M(2)
                                                                               CONE 125
        M1P1=M1+1
                                                                               CONE 136
        M192=M191+1
                                                                               CDWE 137
        M2P1 = M2+1
                                                                               COME 133
A CHSET PREDICTOR COEFFICIENTS
    21 CALL CONCLE(PP.P. IDRORI.1)
                                                                               CURE 140
 C SET CURRECTUR CHEFFICIENTS
                                                                               CO#5 141
        CALL CONCCE(CC.C. IGRDR 1.0)
                                                                               CORF 142
        IF (ANDED . 1) GO TO 22
                                                                               C045 143
        IF(108081.E0.108082) GC TO 23
                                                                               COME 114
 C SET VARIATION FOUNTION COEFFICIENTS
                                                                               COME 145
        CALL COWCCF(VCC.VC.10PDR2.0)
                                                                               COWE 106
        GU TO 24
                                                                               COME 147
     23 DG 22 1=1,IC1L2
                                                                               CONE 1-8
        V2C(I)=(C(I)
                                                                               COME 168
     22 VC([]=C([])
                                                                               COXE 150
        vc(foili)=c(fcili)
                                                                               CO .E 151
    .24 CONTINUE
                                                                               COME 152
  C. START INTEGRATION PROCESS
                                                                               COME 153
                                H(2).FCT.SUM.Y.NN.M1.M2.TIM(2))
        CALL START(10F082)
                                                                               COME: 154
        IF(IURURIANE.IOPDR2.DR.H(1).NE.H(2))GO TO 25
                                                                               COWE 155
        T1M(1)=T(N(2)
                                                                                COME 156
        GU TO 29
                                 H(1) .FCT.SU4.Y.1.MI.MI.TIM(1))
                                                                                CONF 157
     23 CALL START(IDEDP1.
                                                                                COME 15F
     24 STRTR(ISAT) = + FALSE+
                                                                                COWE 159
  C CHECK IF DUSINED TIME HAS BEEN PRACHED (DAY)
                                                                                COXE
  10000 T2=(T1%(1)-2.CC*H(1))/3.5404
                                                                                COWE 151
        INCOMYMENC& GEATE *FACTOU TE 100
                                                                                COWE 352
        IF(NNaEdal) ACTURN
                                                                                COWE
                                                                                     157
        TZ=(TIX(2)+2.00×H(2))/8.6404
                                           REPRODUCIBILITY OF THE
                                                                                COXE 154
        1F(DAY *FAC.LT TT #FAC)RFTURN
                                           ORIGINAL PAGE IS POOR
                                                                                COME 165
  C PACULCT
                                                                                COME 155
    100 CC 150 J=1.5
                                                                                CO32 157
        PALD = 0.400
```

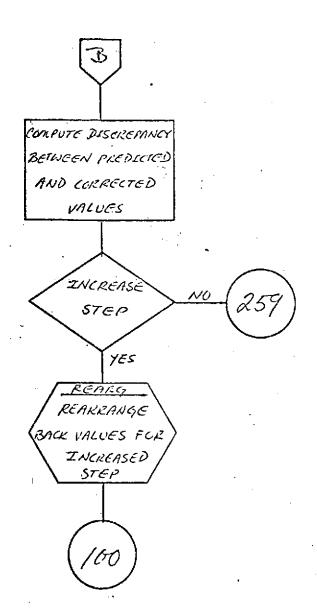
```
COWE 168
      DO 150 1=1.101L2
                                                                             COWE 169
    : K=M1P1-1
                                                                             COWE 170
  150 PRED=PHEC+PP(I)*FCT(J.K)
                                                                             CUWE 171
 (14) Y(J, I) = (SUM(2, J, I) + PRED) * F(I) * *2
                                                                             COWE 172
  192 IF(NULRAG) GO TO 195
                                                                             COWE 173
      00 190 J=4.6
                                                                             COWE 174
      J1=J-3
                                                                             COWE 175
      PRED=3.000
                                                                             COWE 176
      £0 165 I=1.101L1
                                                                             COYE 177
      K=M191-T
                                                                             COWE 178
  15% PRODEPREDAP(1)*FCT(J1+K)
                                                                             COWE 179
  190 Y(J.1)= (SUM(1.J1.1)*FRED)*H(1)
                                                                             CO%E 130
C SAVE PREDICTED POSITION FOR USE BY VARIABLE STEP INTEGRATOR
                                                                             COWE 191
  198 IF(.NUT. (FEVAL.OR. VAR))GO TO 154
                                                                             COWE 182
      PCI=Y(I',I)
                                                                             COME 183
      PC2=Y(2,1)
                                                                             COWE 134
      PC3=Y(3.1)
                                                                             COWE 195
  194 NOURREO
                                                                             COME 186
      TYM=T[V(])+H(])
                                                                             COME 187
  200 NOURS=NOCER+1
                                                                             COWE 143
C EVALUATE ACCELERATION
                                                                             COWE 189
      CALL F(TYN,Y,AUX, FALSE.)
                                                                             CONE. 190
C CORRECT
                                                                             COWE 191
  220 E0 250 J=1.3
                                                                             COME 192
      ₽65=0.00
                                                                             COKE 193
      VEL=0.00
                                                                             COME 194
     .. D3 .200. I = 8, 10.1L.2
                                                                              COME 105
      Kadific :
                                                                              COWE 195
      FOS=PUS+CC(I) *F CT(J+K)
                                                                              COWS 197
  240 VEL=VLL+C(1)=FCT(J+K)
                                                                              COWE 198
      FOS=PUS+CC(1) *AUX(J)
                                                                              CDWE 190
      COWE 200
      VEL=VEL+C(ICILI) #FCT(J.M1P2-ID1L1)
      Y(J.1)=(FC5+SUM(2.J.1))*H(1)==2
                                                                              CITHE 201
                                                                              COME. 202
      Y(J+3,1)=(VEL+SUH(1,J+1))=H(1)
                                                                             COWE 203
  250 CONTINUE
                                                                              COWE 204
  251 1F(NOURR . CT. 1)GD TO 256
      IF("NOT" (FEVAL" "R" VART) GO TO 255
                                                                              COME 205
C CCMPUTE DISCREPANCY BETWEEN PREDICTED & CORRECTED VALUES
                                                                              COWE
                                                                                   206
      YPCR=(FC1-Y(1,1))**2+(PC2-Y(2,1))**2+(FC3-Y(3,1))**2
                                                                              COME 207
       YPCK=YFCF +ECCN(TOPD=1+4)**2
                                                                              COWE 209
                                                                              COME 209
       IF("NUT" VAR )GG TO 257
      IF(YPCH.61.0BLERB(ISAT))GOT0259
                                                                              COXE, 510
                                                                              COME 211
                                                                              COWE 212
       IF(KUUNT(15AT)+LT+M1)GCT0257
                                                                              COWE 213
       16 (INN. GT. 1. ANC. KJUNT2 ( ISA 1 ) . L T. M2 ) GOT G2 57
                                                                              COWE 214
                                                                              COWE 215
       [A(HEV&Sk(ISAT))30T0252
                                                                              CO#5 21c
       IF (YPC M.LT. 1.0-23) GO TO 252
                                                                              COWE 217
       QERTUL(15AT)/YPCH
                                                                              COKE 211
       L=U##(1.00/(DFL04T(I01E1+I01E1)))
                                                                              CONE 210
       IF(0.61.2.33)0=2.00
       IF ( Q + L T + + 200 ) G = + 30 C
                                                                              COME 220
  252 IF(FACFU+F(1).GT.STPUP(ISAT))GCTUPS7
                                                                              C0486 221
       1F(NN+GT+1+ANC+H(2)=Q+CT+STPOP(15/T))+GT0357
                                                                              COME 222
                     91.81.1CR281.128 CF1.44(1).44(1).
                                                                              ESS TAKED
```

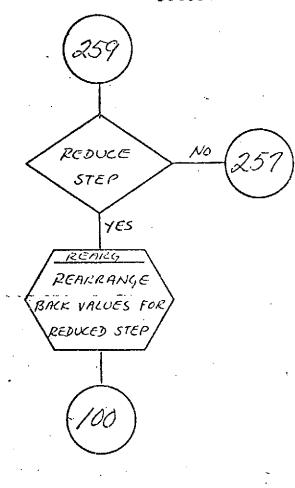
```
COME 224
     . FCT.1.SUM.SUM.CC.C.Y.Y
                                  ..FALSE.,FCT.O)
                                                                      TIMELICOWE 225
     IF(NN.GT.1)CALL REAPGINE.MI ... . ICEDR1.10PDR2.H(1).H(2).
                                                                             COWE 236
        .T1M(2).FCT(1,M1+1).NN.SUM(1.1.2).SUM.VCC.VC.Y(1.2).Y..TRUE..
                                                                             COME 287
        FCT.C )
                                                                             COWE 228
      KOUNT(ISAT)=101L2
                                                                             COME 229
      IF(NN&GT.1)KOUNT2(ISAT)=102L2
                                                                             €0₩E 230
      GD TO 100
                                                                             COME 231
  25, IF(YPCR.LT.HLVERO(ISAT))GCT0257
                                                                             COME 232
C REDUCE STEP
                                                                             COME 233
      C=.500 · ·
                                                                             COVE 234
      IF(HLVDSk(ISAT))GOTO258
                                                                             CDWE 235
      Q=REGL(15#T)/YPCR ...
                                                                             COLE 236
      Q=Q**(1.EC/(DFLOAT(ICIL1+ID1L1)))
                                                                             COWE 237
      IF(Q.GT.2.D0)G=2.D0
                                                                             CONE 238
      IF(0 %LT + +500) C= +500
                                                                             COVE 239
  250 IF(FACEH(1)*0.LT.STEPLC(ISAT)) COTO257 -
C IF FIRST TIME OUT OF STARTER AND STEP PERSUCTION IS NEEDED. RESTART
                                                                             COME 740 1
                                                                             COME 241
C WITH SMALLER STEP
                                                                             COME 362
      IF(STRIR(ISAT))GDT0253
                                                                             CORE 253
      H(1)=0*H(1)
                                                                             COME SAV
      H(2)=u*H(2)
                                                                             COWE 245
      AUXI=UAES(F(I))
                                                                             COME 246
      CALL CLEAR(Y, 12, NN)
                                                                             COME 247
      90 2520 I=1.6
                                                                             COME 248
      Y(I, I) = ELEMST(I, ISAT)
                                                                             COWE 249
 2520 CONTINUE
                                                                             CONE 250
      T1M(11=3+6404*DAY0
                                                                             COWE 251
      T14(2)=T1V(1)
                                                                             COWE 252
      IF(NN.20.1)60 TO 2540
                                                                             COME 253
      00 2525 I=1.6
                                                                             CONE 256
      Y(I, I+1)=1.00
                                                                             COWE 255
 2525 CONTINUE
                                                                             COME 250
 25AU ARITE(6.254) ISAT, AUXI
  234 FURNAT (161. SAT 1.12 . /. INITIAL STEP TOO LARGE! . /.
                                                                             COME 257
       " RESTABLING WITH GILLAR SEC STEP!)
                                                                             COWE 258
      IF (NN+EU+1) GCT025
                                                                             COWE
                                                                                  250
                                                                             COWE 250
      GC TO 24
                     M1.M1.ICRCR1.ICRCR1.H(1).H(1).
                                                                             COWS 251
                                                          TIM(1).TIM(1).
  233 CALL KENFOL
                                     . FALSE. .FCT.0 )
                                                                             COWE. 262
        FCT, 1, SUM, SUM, CC, C, Y, Y,
                                       IGRO R1 - 10 RD R2 - H(1) - H(2) -
                                                                      TIM(1)CDMF 263
       IF(NN+GT+1)CALL PEARG(M2+M1+
        .TIM(2).FCT(1.M1+1).NN.SUM(1.1.2).SUM,VCC.VC.Y(1.2).Y..TRUE.,
                                                                             COWE 254
                                                                             COWE 265
        FCT.C)
                                                                             COWE: 265
      KGUNT(15AT)=1C1L2
                                                                             COWE 267
      IF(NN.GT.1)KOUNT2(1SAT)=1C2L2
                                                                             COME 268
                                                                             COWE 269
  257 IF(FEVAL . AND . YPCR . LE . CTCL (ISAT)) GRT J256
                                                                             CJWE 270
  255 IF (NCORR.LT.2)GO TO 200
                                                                             COWE 271
  256 TIM(1) # IYM
       IF(VAR.ANC.KOUNT(ISAT).LT.W1)KCUNT(ISAT)=KOUNT(ISAT)+1
                                                                             COWE 272
                                                                             COME 273
      MM=M1-1
C RESET BACK VALUE ANRAY
                                                                             CONE 274
      55 197 II=1.44
                                                                             CO 45 275
      OJ 1-7 J=1.3
                                                                             CONT 276
  157 FUT(U.11) =#CT(U.11+1)
                                                                             COMS 277
                                                                             CUME 270
      FCT(1,N1)=AUX1
      FC1(2:N1)=4UX2
                                                                             COME 270
```

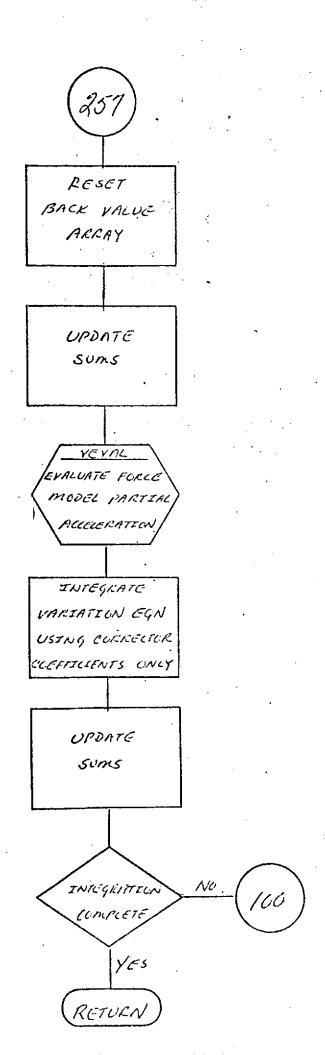
```
COWE 289
     EXUA=(IM,E)TO4
                                                                          COWE 231
  199 CONTINUE
                                                                          COWE 282
      STRIK(ISAI)=.TPUE.
                                                                          COME 233
C UPCATE SUMS
                                                                          COME 284
      CD 398 J=1:3
                                                                          COME 235
      5UA(1.J.1)=SUM(1.J.1)+FCT(J.M1)
                                                                          COME Sec
 193 SUN(2.J.1)=SUM(2.J.1)+SUM(1.J.1)
                                                                          COWE 257
  260 IF(NN+LG+1)GCTC950
                                                                          COME SES
      PRED=TIM(2)+H(2)
                                                                          COWE 209
      IF(PALD&GYaTIM(1))GO TO 100
                                                                          COME 290
      TIM(2)=PRED
                                                                          COYE 291
      NNL1 = NN - 1
                                                                          COWE 292
      MM=M2-1
                                                                          COME 203
      DU 198 JJ=1.NNL1
                                                                          COME 29A
      KKK=(JJ-1)*#2+M1
                                                                          COWE 295
      DO 156 11=17MM
                                                                          COWE 206
      KK=KKK4II
                                                                          COWE 297
      CO 195 J=1.3
                                                                          CORE 298
  198 FCT(J.KK)=FCT(J.KK+11
                                                                         COME 200
      IF(VAR +ANC+KOUNT2(ISAT)+LT+M2)KOUNT2(ISAT)=KOUNT2(ISAT)+1
                                                                          COME 300
      PRE6=(TIM(2)-TIM(1))/H(1)
                                                                          COME 301
      IF(PREC.EG.0.00)50 TO 262
      CALL INTER (PRED.H(1). ICROR1.1.Y.FCT.M1.SUM)
                                                                          COME 305
                                                                           CDWE 303
  262 CALL F(TIM(2),Y.AUX..TRUE.)
                                                                           COME 304
C EVALUATE FUNCE MODEL PARTIAL ACCELERATION
                                                                           COME 305
      CALL VEVAL(Y.FCT(I.MI+M2).6..FALSE..M2)
                                                                           COWE 306
C INTEGRATE VARIATION EQUATIONS USING COPPRECTOR COEFFICIENTS ONLY
                                                                           COWE 307
      00 320 L1=2:NN
                                                                           COME 308
      KO=M1+(L1-21*M2
                                                                           COWE 309
      DU 320 J=1.3
                                                                           COME 310
      FC1=0.DO
                                                                           COWE 311
      CO 315 I=1.102L2
                                                                           COWE 312
      K=42P1-I
                                                                           COWE 313
  215 PC1=PC1+VCC(1)*FCT(J.KC+K)
                                                                           COKE 314
  320 Y(J,L1)=(SUM(2,J,L1)+PC1)*H(2)*#2
                                                                          COAE 315
    . H2C=VCC(1)*F(?)**?
                                                                           CORE 316
      IF(NUDHACI GO TO 331
                                                                           COYE 317
      NNN= u
                                                                           COME 318
      H1C=VC(1)*H(2)
                                                                           COWE 319
      DU 325 L1=2+NN
                                                                           COWE 320
      KU=M1+(L1-2)+M2
                                                                           CONE 321
      DU 325 J=1.3
                                                                           COWE 322
      J1=J+3
                                                                           COWE 223
      PC1=0.00
                                                                           CONE 324
      DO 322 I=1.IC2L1
                                                                           COWE 325
      K=M2P1-I
  322 PC1=PC14VC(T)*FCT(J+K0+K)
                                                                           COWE 325
                                                                           CONE
  325 Y(J1.L1) = (SLM(1.J.L1)+PC1)*H(2)
                                                                                327
                                                                           COWE
                                                                                328
      CO 330 J=1.3
                                                                           COWE
                                                                                329
      J1=J+3
                                                                           COME
                                                                                330
      CU 329 I=1.3
                                                                           COWE
      ii=i+3
                                                                           PWC
                                                                                232
      S(1.J)=-F2CVVMATRX(T.J)
                                                                           CUNE BEB
      5(1, J11=-F2C*VMATRX(1, J1)
      S(11.J)=+F1C*VMATRX(1.J)
                                                                           CDWF 334
                                                                           COME 335
  dn, S(II.JI) =-HICAVMATEX(I.JI)
```

•		,	• •	•	-			• •	COME	336
		S(J.J)=S(J.J)+1.D0						,	COME	
	330	S(J1.J1)=5(J1.J1)+1.D0	•						COME	
		GU TU 334						•	COME	
	331	NNN=3							COME	
		CD 333 I=1.3	•						COME	
		00 332 J=1.3			•				CONE	
		S(1.J) =- H2C*VMATRX(I.J)			•				COME	
,		S(1,1)=5(1,1)+1.00		•			:		COME	
	334	CALL DAVEFT (NAN.S. 5. AUX)	•						COME	
		DU 336 L1=2+NN						_	COKE	
		KK=M1+(L1-1) = M2 .					•		COME	
		DO 335 J=1.NNN			•				COME	
		PC1=0:00		•					COME	
		DO 337 K=1+NNN	•						COME	
	337	FC1=PC1+S(J,K)*Y(K,L1)						-	COME	
	330	AUX(J)=P(1							COME	
		CG 335 1=1.3							COME	
		PC1=0.CU							COME	
		CO 333 J=1,NNN						•	COME	
		PC1=PC1+VMATRX(I+J)*AUX(J)							COWE	
	33é	FCT(I.KK)=FCT(I.KK)+PC1							COME	
		DO 900 L=2.1 A							COWE	
		L1=M1+L +M2+M2							COME	
		CC 900 J=1+3		:	•				COME	
C	UPE.	ATE SUMS	•						COME	
	•	SUN(1.J.L)=SUM(1.J.L)+FCT(•	CONS	_
	300	- 5U3(2)U+L)=SUM('S+U+L)+SUM(111111			•			COME	363
C	DET	ERMINE IF DISTRED TIME HAS		CHED					COVE	354
		T2=(TIM(2)-2.00*H(2))/9.64					•			
		IF(DAY*FAC+ST+T2*FAC)SO TO							COME	
	950	T2=(TIM(1)-2+C0*H(1))/5+64			-			•	COWE	
	•	IF (DAY#FAC+GT+T2*FAC) GD	TO 1 CO				-		COWE	367
		RETURN				•			COWE	
	•	ÉNO							COME	30.8
							•			









DATARD

DESCRIPTION

DATARD is a subroutine specifically designed for the MULTI-ARC GEODYN program.

DATARD stores on scratch files, updates and retrieves from scratch files all a priori and parameter estimation in information about each arc.

DATARD uses several switches that operate as follows.

UPDATE - .TRUE. = write information.
.FALSE. = Read information.

APRIOR - .TRUE. = a priori information to be operated on.

.FALSE. = a priori information not to be operated on.

BMAT - .TRUE. = normal equations to be operated on.

.FALSE. = normal equations not to be operated on.

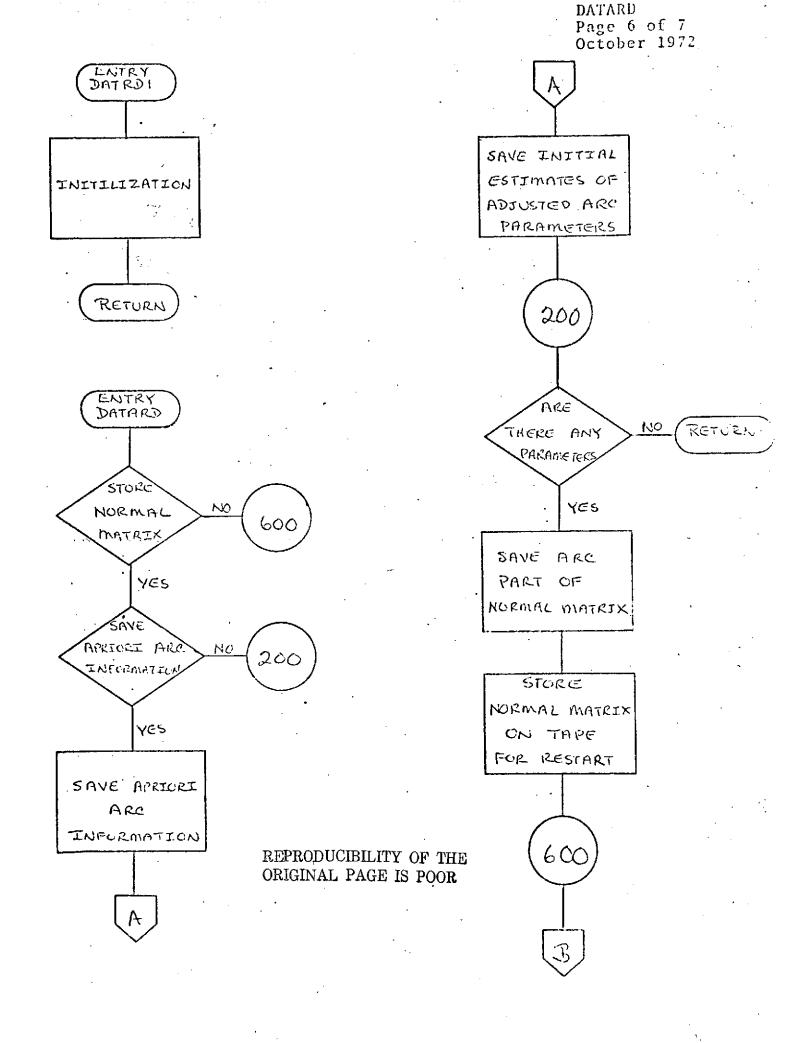
KAME	DATARD
ENTRY POINT	PURPOSE
CATHO1	INITIALIZATION
CATARO	TO STORE: UPDATE: AND RETRIEVE INDIVIDUAL ARC PARAMETER INFORMATION
CALLING SEQUENC	E CALL DATROI (CD. BIAS. SUMI. INDXCS. SUMZ)
STABUL TYPE	DESCRIPTION
(1) CD I	INPUT & CUTPUT - ADJUSTED VALUES OF THE INDIVIDUAL ARC FORCE MODEL PARAMETERS
EIAS I	INPUT - A PRIORI VALUES OF THE INDIVIDUAL ARC PARAMETER
SUM1 OF (1)	INPUT & CUTPUT - ARC NORMAL MATRIX
. INDXCS 1*2	INPUT - INDICES OF ADJUSTED GEOPOTENTIAL COEFFICIENTS
SUM2 DF	INPUT - RIGHT HAND SIDE OF NORMAL EQUATIONS
CALLING SEQUENC	E CALL DATAFD (ARCNC, APRIOR, UPDATE, BMAT)
SYMUUL TYFE	DESCRIPTION
ARCNO I	INPUT - ARC NUMBER
APRIOR L	INPUTTRUE. THEN READ OR WRITE A PRIORI' INFORMATION ACCORDING TO *UPDATE* .FALSE. THEN DON'T READ OR WRITE A PRIORI .INFORMATION
UPJATE L	INPUTTRUE. THEN WRITE INFORMATION .FAUSE. THEN READ INFORMATION
dMÁT L	INPUT - *TRUE* THEN READ OR WRITE NORMAL MATRIX ACCORDING TO 'UPDATE' *FALSE* THEN DON'T READ OR WRITE NORMAL MATRIX
SUERCUTINES USES	O CLEAR CWRITE DREAD ERROR
CEMMEN BEDEKS	ALPMRC APARAM CELEM CONDUT CPARAM CTIME FMODEL INITEK INTELK PRESEK PRIORI TPEULK VRBECK
INAUT FILES	REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

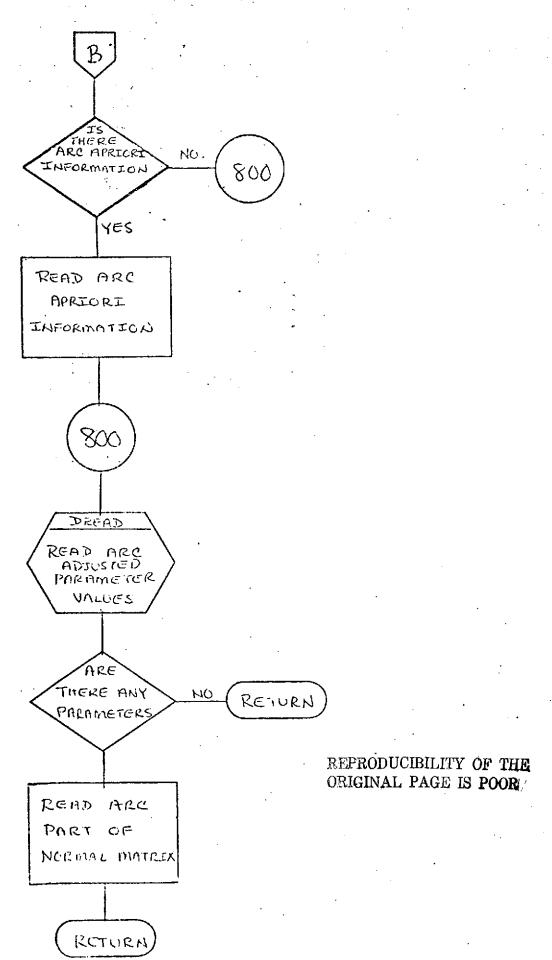
CUTPUT FILES NONE

· · · · · · · · · · · · · · · · · · ·	0454	61
SUBROUTINE CATROL(CC.BIAS.SUMI.INDXCS.SUMZ)	DATA	62
IMPLICIT REAL *E (4-M.O-Z)	DATA DATA	
LUGICAL AFRICE-UPDATE-EVAT-CMP CPR-STARTE-STARTW-HYPER		6.4
INTEGER#2 INDXCS	DATA	
INTEGER BIAS, ARCHO, SCRA, SCRB, SCRC, FLTP, CUTP, XYZTP, PLOTP, GROTP,	CATA	
 THOUTIVELENIALELEMST.DAYREF.CD.SUM1.DATP.STARTA.STARTO.DUTSTR. 		66
• SUM2.eEIAS	DATA	57
COUBLE PRECISION MODEL	DATA	68
DIMENSION CD(1), BIAS(1), SUMI(1), INDXCS(1), NSTORE(6), SUM2(1)	DATA	69
CIMENGION EGIAS(1)	DATA	70
CUMMUNVALEMECVALPHA(53), ELCUT, FYPER	SATA	71
CUMMENZAFARAKZINPAR(10) *	DATA	72
CGAMUNICELEMET (53)	DATA	73
COMMON/CONCUT/IGI(13).STARTR.STARTW.STARTA.STARTO.INSTRT.OUTSTR	DATA	*
COMMON/CHARAM/MSTA.NMAST.NSTEST.NDIM.MGIAS.NGPC1.NGPC2.NGPCOM.	CATA	7.5
. NCS: ST.CMPGFR:LIM1:LIM2:NDEN:NDENST:NTIDST:NTIDEN:INNRSW:	DATA	76
• NCUNST NOCONS	DATA	
COMMUNICTIVE/CAYREF(23)	ATAC	
COMMON/FMCDFE/INSEX(A).CS(20.32).MODEL(B)	CATA	75
COMMUNITERVIEDYNO(48).MISLOC(9)	ATAC	ዓር
COMMUNICATELEXITHOUTI(52)+NORRAT(75)	ATAC	
CUMMONZPASHEKZCAYSTAINCES (15)	DATA	32
COMMUNITERIZECEMIN(192)	UATA	60
CDUMON/TPEFEK/INTP.CUTP.DATP.XYZTP(3).PLOTP.IOBS.SCRA.SCRC.FLTP.	DATA	ጓራ
■ GROTP	DATA	95
- GOMMONZVRELOKZA1(26), IEUF(1980), AORN(69)	DATA	₽6
COUIVALENCE (SCRB.DAFILE).(NGPAHC.INPAR(6)).(NPARAM.INPAR(8))	DATA	57
" EUJIVALENCE (MAXSAT.IG1(6)).(NEBIAS.INPAR(9))	DATA	83
.DATA SCRE/15/	DATA	용인
NSTORE (1)=1	DATA	90
NGTURE (2)=6*METAS+2*(NCSEST-NGFCOM)-12*MAX5AT	DATA	91
NSTORE (3)=NSTORE(2)+2*NCFCOM+1	DATA	იგ
NoTuke(4)=MSTGRF(3)+M9TAS*3-1+2*(NCSEST-NGPCCM)	CATA	93
KSTOKE(J)=NSTCPF(4)+2*NGPCCM+1	DATA	50
SV(S=19QDN)+TARKAM±E=2A16M+(5)3PDTRM=(5)4PA	DATA	95
N=20=(NGFC1-2)/225+2	DATA	95
NAUC 1=NA L C+1	DATA	97
NWURD=2*(NGPC1-1)	DATA	98
KETURR	CATA	35
ENTRY CATARO(ARCNO.ARRICR.URDATE.BMAT)	DATA	100
NSTART = (AFCNU-1) = NH ±C+1	DATA	101
IF(*NUT.UFDATE) GO TO 600	CATA	102
C SAVE A PRIDRI AND INFORMATION	CATA	103
IF(*NUT*AFRICE) GO TO 200	DATA	104
WRITE(SCHP) INPARTINDEX.CAYSTA.XYZTPINORRAT.ELCUT.HYPER	DATA	
IF(Naulasaudec) GP TO 90	DATA	105
60 40 11=1:82f1AS:350	CATA	
12=41.13(11+300.67f) OF THE	DATA	
40 AUTICOCAGO (FETASCI), I=11.12) REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR	DATA	
ORIGINAL PAGE IS POOR	CATA	
1510m1=451652(h) ORIGINAL	DATA	

	,	
ISTOR2=NSTORE (N+1)		DATA 112
. CO 100 11=1STCR1.1STCR2.450		DATA 113
12=MINO(11+649.ISTOR2)		DATA 116
100 WHITE(SCRA) (EIAS(1).1=11.12)		DATA 115
C SAVE INITIAL ESTIMATES OF ACJUSTED ARC	PARAMETERS	DATA 116
IF (NGPARCALEAC) GO TO 200		DATA 117
NGP=3#NGFARC		CATA 115
CU 150 11=1+NCP+900		DATA 119
12=M1W0(11+895+NSP)		DATA 120
. 150 WRITE (SCFA) (INGXCS(I).I=I1.I2)	•	CATA 121
200 CALL CLEFF(184F,990,2)	•	DATA 122
DJ 300 1=1.53		CATA 123
300 IBUF(1)=cLEMST(1)		DATA 126
CO 310 I=1,23		DATA 125
11=1+53		CATA 126
310 IBUF(11)=[AYREF(1)		DATA 127
CO 320 I=1.48		DATA 183
11=1+7¢	•	DATA 129
320 13UF([1] = 1EFYMD([])		DATA 130
-/ DO 350 1=1.192		DATA 131
11=1+124	•	DATA 132
330 Isuf(II)=cLEMIN(I)		DATA 133
IGUF (317)=NPARAM	•	DATA 136
CALL DWRITE (SCREINSTART, IBUF)	•	DATA 135
CU 400 J1=1.N¥030,450	·	DATA 135
J2=MINO(J1+349.NAURD)	•	CATA 137
1	-	DATA 138
l=J+Ji+i		DATA 137
C SAVE ARC PART OF NORMAL MATRIX	• ,	DATA 140
350 180F(1)=CC(J)	•	DATA 141
NSTART=NSTART+1		DATA 142
400 CALL DAKITE (SCRBINSTART, LEUF)	•	DATA 143
IF(*NUT*EMAT) RETURN		DATA 144
IF(NPARAMALE.O) RETURN	•	DATA 145
C STURE NURMAL MATRIX ON TAPE FOR RESTAR	· T	DATA 146
L=Z*NU1M*NPARAM-NPAPAM*(NPAFAM+1)		' DATA 147 DATA 148
DU 500 11=1.L.450		DATA 149
15=W100(11+0+6+F)	•	CATA 150
500 WALTE (SCRC) (SUM1(I).I=I1.12)		DATA 151
IF(.NUT.STARTW) RETURN	PRODUCIBILITY OF THE	DATA 152
L=L/5 選出	PRODUCIDITAL OF THE	DATA 153
RRITE (LUISTE) L OR	IGINAL PAGE IS POOR	DATA 156
L=NOIH=(NEIM+1)		DATA 155
DO 550 11=1+1.450		DATA 150
7 C - 11 11 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•	DATA 157
550 ERITE(GUTETR) (SUM1(1):1=11:12)		DATA 153
L1=NDIM#2		DATA 159
DU 575 11=1+L1+430		DATA 150
C READ AND A PRIDEL INFORMATION	•	DATA 151
12=M1NO(11+3+3+L1)		SATA 162
575 WRITE(COTSTS) (SUMS(1).1=11.12)		CATA 153
#RITE(OUTSTR) INDEX	r	DATA 154
ACTUAN SCC IF(*NUT*AFRIUR) 30 TO 800		DATA 16F
CALL CLEAF(MISHOGENER)		DATA 155
HEAL (JCHP) INPATAINDEX + DAYSTA + XYZ	TO MONEAT ELCUTARYPER	DATA 167
MERCIDORES DIENTIFICACIONIO INTERIO		-

	IMAGE THE ALCO TO 490		CATA 168
	IF(NEUIAS-LE-C) GO TO 680		DATA 159
	00 640 11=1.NERIAS, 350		DATA 173
	12=MINO(11+749.675)	• •	SATA 171
	540 READ (SCRA) (EEIAS(I).1=11.12)	• *	DATA 172
	680 CU 700 N=1.5.2	•	DATA 173
	ISTGRI=NSIORE(N)		DATA 174
C	READ AND ADJUSTED PARAMETER VALUE	.5	DATA 175
	1STORZ=MS106E (N+1)		DATA 175
C	READ AND PART OF NORMAL MATRIX		DATA 177
	UU 736 11=1STCR1.1STCR2.450		SATA 173
	12=M1hc(11+145,15TOR2)	•	DATA 179
	700 READ (SCRA) (81/5(1), 1=11,12)		DATA 190
	IF(NGPARC+LE+0) GD TO 800		DATA 151
	NGP= 3*NGF ARC		DATA 152
•	DO 750 II=1.NGP,900	•	CATA 153
	12=M14.C(11+399+NGP)	•	CATA 136
	750 KEAD(SCRA) (INCXCS(1). I=11.12		DATA 195
	BOU CALL DREAD(SCRB.NSTART. IPUF.&	.2(00)	DATA 195
	CU 810 I=1.53		DATA 137
	810 ELEMST(I)=IAUF(I)		
	tu 620 I=1,23	·	DATA 195
	11=1+53		DATA 169
	820 DAYREF(1)=180F(11)		DATA 150
	Ç∪ ತನ≎ I=1,48	•	DATA 141
	11=1+76	• •	DATA 152
	830 ICPYM0(I)=I3UF(II)		DATA 193
	Du 3-0 I=1.192		DATA 15%
	11-1+124	•	SATA 195
	ÉAO ELEMIN(I)=IBUF(II)		DATA 195
	NPAR AMETOLE (317)		DATA 177
•	DU 400 JI=1:NWUFD:450		DATA 155
	NSTART=#START+1		DATA IFF
•	CALL DREAD(SCENINSTART.IBUE.8	52 COO)	DATA 200
	12=MIND(J1+109+NAD+D)	•	DATA COL
	DO 900 J=J1.J2	•	DATA 202
	· 1=J-J1+1	•	L DATA 203
	900 CD(J)=16UF(I)	·	DATA 204
	IF(* MOT * SMAT) RETURN	•	DATA 205
	IF(NPARAMALEJO) FETURN	•	DATA 206
	L=2+NJ12+NPARAM-NPARAM+(NPARA	4M+1) .	CATA 237
	DU 1000 11=1.L.450		FIS ATAC
	12=6140(11+549+1.)		DATA 200
	1000 HEAD (SCRC) (SUM1(I)+I=I1+I2)		DATA 210
	RETURN	·	DATA 211
	2000 CALL ERRCR(11.5CRB)		DATA 212
	RETURN .		DATA 213
	CMS	REPRODUCIBILITY OF THE	CATA 216
		ORIGINAL PAGE IS POOR	•





DATBSE

DESCRIPTION

DATBSE is a subroutine specifically designed to read data from the DODS Data Base. It also has the capability to read data tapes in DODS Data Tape Format. DATBSE does not interpret the data it reads. It can read only observation data.

When reading data from the data base, DATBSE first searches the observation file directory record to ascertain if data is present for the satellite requested. If data is present DATBSE determines which portitions contain the desired data and then reads into core one physical record of data containing 35 observations and then returns a header record indicator through COMMON to the calling program. On all subsequent calls DATBSE returns through COMMON one observation per call until all of the requested data has been returned at which time it returns a sentinel record indicator.

DATBSE assumes that the first call for each arc requests data for a different satellite and searches through the observation file director to ascertain if data is available.

When no data is available or when read errors occur DATBSE prints error messages and terminates the run by calling ERROR.

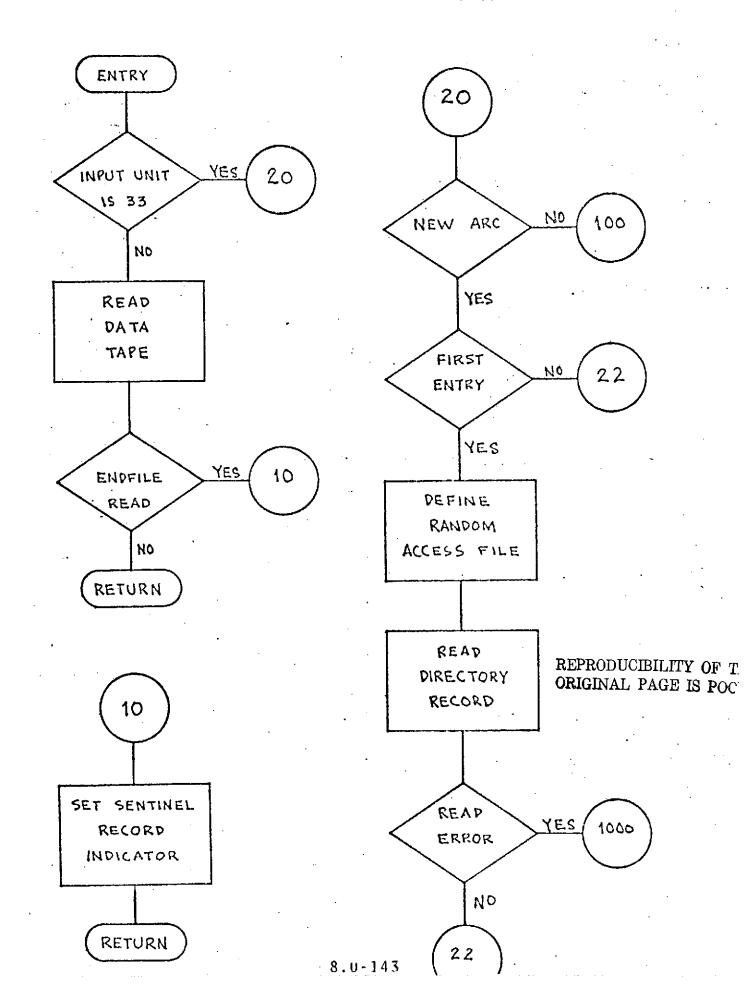
NAME	DATOSE
PUPCSE	TO READ COSERVATION DATA FROM CODS DATA HASE
CALLING SEQUENCE	*CALL DATESE(IN.DSTART.DSTOP.ISATID.CLDARC)
SYMBOL TYFE	DESCRIPTION
IN I -	INPUT - CATA FILE NUMBER .
DSTART OF	INPUT - CATA STAPTS IN DAYS FROM JAN C.O OF THE REFERENCE YEAR
50 4012 0	INPUT - DATA STOP TIME IN DAYS FROM JAN 0.0 OF THE REFERENCE YEAR TO THE TREFERENCE YEAR TH
I GITAZI	INPUT - SATELLITE ID
OLDARC L#1	INPUT & DUTEUT - FALSE ON FIRST CALL FOR EACH ARC CHANGED TO TRUE
SUBROUTINES USED	CLEAR DJUL ERROR YMDAY
COMMON BLOCKS	TADCOD
INPUT FILES	IN - DATA FILS NUMBER SEPRODUCIBILITY OF THE
OUTPUT FILES	ORIGINAL PAGE IS POOR
RESTRICTIONS	NATA FILE NUMBER MUST BE 33 FOR DODS DATA BASE OTHERWISE DATA FILE IS ASSUMED SEQUENSIAL DODS FORMAT DATA TAPE
REFERENCES	CODS DATA BASE DESERVATION FILE DESCRIPTION FIGHT DOOR COCUMENTATION!

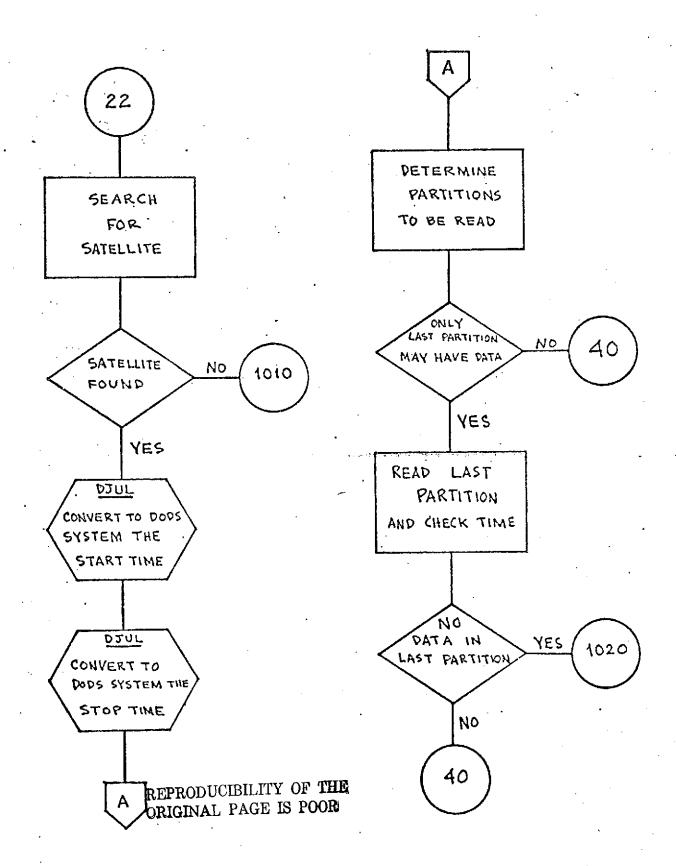
ullet	•	
SUBROUTINE DATESE (IN. D.START. DSTOP. 13ATID. OLDARC)	DATS	30
REAL *5 TIME1.STMAM1.0051.CG(2).085COH.DSTART.DSTOP.MJSTRT.MJSTOP.	PATE	6.0
1 MUDIDULLIUNEE YYDAY	CATS	5.1
DIMENSION G(5).138(28).MPEC(25.35)	DATH	4.2
LUGICAL#1 NOTIST-OLDARC	DATE	6.3
INTEGRA ISATIO.SATNO.RECORD(F&C).GUTP.IBAT.RECSAT	DATE	A.A.
INTEGER 184 13 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	E-DATS	6.5
	DATE	4.6
1 140KO+KEC2(1760)	CATE	37
DIMENSION VENEC(25,35)		ΛÞ
CUMMUNIOC.DATITIME1.STNAM1.UBS1.DG.DESCR.SATHO.1DBN01.WT1.G.TCQ	DATA	A C
1 102 (11 (161 (TT4G, 00 (T1, P#172 (16		
EQUIVALENCE (EFECT-LERVOICE) ARE CORP(1) AREC2(1)) + (IREC1+ICOUNT)	DATH	50
EUULVALENCI (INH(I).TIMEI)	DAT3	51
DATA DURLENGOIST . J. OUTE . ISPRIZEA 3009 1.500 FALSE 1.5.0/	CATH	52
16 (IN.ED.) GC TD 20	DATe3	5.3
C READ DATA TARE	CATH	56
E HEAD (IN . ERDEIO. TRR #E) TIMEL, STRAML, MISTER STRUCKS SATIO. LUBNOL.	DATE	-3 f.

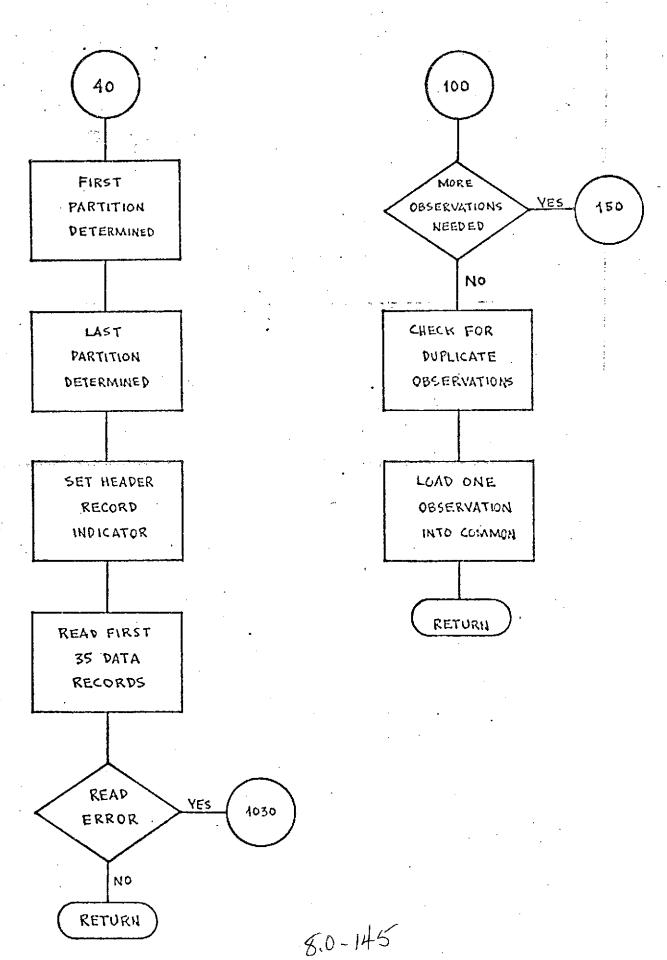
		•	•		
	1	1 . WITT GATCOR . 162. IT . 161. TTAG . FBITT . PB	IT2.15	STAG	'5 c
		CLUARC=.TFUE.		DATE	57
		F.ETUKN		CATB	5A
C	551	SENTINEL RECORD INDICATOR	•	DATS	59
	10	T17E1=+2.000	•	• • • • • •	60
		PETUEN		DATB	61
	20	IF(GLDARC) GG TO 100		. CATB	52 63
		IF(NUT151) GO TO 22		DATE	54
		NGT1ST=+TRUE+		DATE	65
C	DEF	INC DATA EXSE RANDOM ACCESS FILE		CATE	
		OLFINE FILE 2(6609,3520,L, (COUNT)		DATE	67
_		ICOUNT = 1		CATE	58
C	REA	B DIRECTORY FECORD		CATE	69
		READ(IN'ICOUNT, ERR#1000) RECORD		DATE	
		CALL CLEAF (M2FFC: 25:35)	,	DATE	71
		RECPAR = LL RECT (2)		DATE	72
_		- GEDARGE TRUE . RCH DIRECTORY FOR SATELLITE		DATS	73
·	20 M	EU 25 I=2,LGEC		DATS	74
		IF(RECORD(1).05.0) GO TO 25		DATE	75
		ISAT=+RECCHD(I)		DATIS	? €
	•	IF(ISAT.EG.ISATID) GD TC 30		DATH	7.7
	25	CONTINUE		DATB	78
		GD TU 1010		CATB	7 Ç
	30	NOUS=RECCRO(1+1)-1		DATE	- 80
	-	RECSAT=(NCSS-1)/35+1		DATE	21
		NUPART = (RECSAT-1)/RECPAR+1		CATS	
		1w0~D=I+4		CATB	
C	CCN	VERT START TIME TO DODS SYSTEM		DATE	_
		MÚSTRT=DUCL(DSTART)-DUREF000C1DO		BYAG	
Ç	CCM	VERT STOP TIVE TO DODS SYSTEM	•	CATS	
		#JJTCP≈JJCE(95T0P)+CJREF++0000100	,	DATE	
		NAURU=1xC60+%CFAFT+1		CATR	
C	DET	EAMINE FIRST & LAST PARTITIONS TO BE RE	EAD	DATE	36
		Dú 33 J=1x3R∂ MWORD	•	DATE	.90
		KwURD2=2*U-1		DATE	91
		MUDERALEZ(KADREZ)	•	DATE	37.
		IF (MUSTRIALT, (MUS+1.DS)) GO TO 40	•	DATE	94
_		CONTINUE Y LAST PARTITION MIGHT HAVE DATA	•	DATE	-
C	LINE	Jekwoad		DATE	96
		INDUD=NOUS+(NCUS-1)/35+35	REPRODUCIBILITY OF THE	DATE	_
		NOREC=RECSAT-PECSAT/RECFAR*RECFAR	REPRODUCIBILITY OF TO POOP	DATS	
		IREC1=HEC2(KWCPD2+1)+NDFEC-1	REPRODUCIBILITY ORIGINAL PAGE IS POOR	DATE	99
_	REA	U LAST FARTITION AND CHECK TIME	Oltron	DATE	100
	,,,,,,	READ (INTICOUNT, ERRE1030) MREC .		DATH	101
		105(1)=MREC(1:INDDB)		DATU	102
		100(2)=MREC(2.1NSOB) .		DATE	103
		OC10+0+(0G-0+0+0+0+0+0+0+0+0+0+0+0+0+0+0+0+0+0+0		CATE	124
		IE(MJ L1.351AR1) GO TO 1020		SATE	105
С	FIR	ST PARTITION TO SE READ NOW CETERMINED		BTAG	-105
	43	(I FART = UD X CLU = TC DRD + I)		DATR	107
•		NW UNDZ = Z 4 (I NORO+ IPART-1)		DATU	
		[H±C1=hc(2(K+ChQ2)		DATE	
		CU NO KEU4NACRO	· · · · · · · · · · · · · · · · · · ·	DATE	
		Ew3-02=2*K-1		CATE	111
			•		

			•
	NJD=REC2(LMORC2)	ETAG	112
	IF(MJSTOP.LT.(MJD+1.DO)) GD TO 50	DATR	113
	45 CONTINUE	CATE	110
c	LAST PARTITION TO BE READ NOW DETERMINED	CATB	115
•	50 KPART=MINC(NOPART,K-INCRD+1)	DATB	116
	NREC=IRECI+RECPAR-I	HTAC	117
	NOREC=RECSAT-RECSAT/RECPAR*RECFAR	DATE	
	1F(NDREC.EQ.O) NDREC=RECRAR	DATH	119
	IF(IPAPT. LO. KPART) NREC=IREC1+NDREC-1	DATH	120
-	1000=35	DATE	
	NC3=0	DATB	
	NDUB=NC85+ND85/35*35	CATE	
	IF(NCOB. 2C.O) NOOB=35	DATE	-
	SATNU=15AT .	DATE	
Ć	SET FLADER RECORD INDICATOR	DATS	
	TIME1=-1.0DC	DATB	
	LAGEL=1	DATE	
C	READ FIRST SE SATA RECORDS	DATE	
	READ(IN*ICOUNT, ERR=1030) MREC	DATB	
	LAOEL=2	CATS	
	IF(IPART.NE.KPART) RETURN	DATE	
	NREC = IREC1+NOREC-1	CATE	_
	IF(NUREC.EO.1) INDOBENDUS	CATE	-
	RETURN	DATB	
	100 MDG=NUH+1	DATS	
	IF(NUB-GT-INDCE) GO TO 150	DATH	-
C	CHECK FOR CUFLICATE ORSERVATIONS	DATE	
	DO 110 I=1.35 TF(MREC(1,508).EQ.M2REC(1.T).AND.MREC(2.N03).EQ.M2REC(2.T).AND.	DATS	-
	1 MREC(3,NDB), FO. M REC(3,1). AND. M REC(4,ND3). EQ. MREC(4,1). AND.	CATE	
	2 MREC(23,NOH).50. M2REC(23,I)) GO ID 100	DATE	
	110 CONTINUE	CATE	
_	SELECT UNE DESERVATION FROM CORE AND LUAD IN COMMON	DATE	
•	EQ 120 1=1,25	DATE	_
	120 IOS(1)=MACC(1,NOS)	DATE	146
	RETURN	CATS	167
-	SAVE PREVIOUS 35 CBSERVATIONS	CATS	148
•		DATS	149
	DEBK(II) OF THE	DATE	150
	150 MERIC (1. J) = VREC (1. J) ORIGINAL PAGE IS POOR	DATS	151
	IF(1CULNIAGT.NEEC) GO TO 200	BTAT	132
С	READ 35 MORE CHSERVATIONS	CATB	153
_	READ(IN'ICOUNT,ERR=103C) MREC	DATE	154
	NC3=0	CATH	155
	IF(IPAKT.ED.KPART.AND.ICUUNT.EC.NEEC) INDUBENDOB	DATE	155
	GO T) 10C		157
	200 IF(IMART.CH.KFART) GO TO 10		159
C	DETERMINE FIRST RECORD IN NEW PARTITION		150
	NJ:8=0		160
	1PAnT=12AnT+1	CATR	
•	大手 しょうしゅ マイ・アン・アン・アン・アン・アン・アン・アン・アン・アン・アン・アン・アン・アン・		152
	ICJUAT=ReCa(KREPD2)		.1 ÷3
	NREC=1CLUNT+PFCPAR-1		164
	IFTIPARTALTAKEARTI GO TO 100		155
	NRLU=102UNT+H7HZHZC=1		14.5
	IF(NORGI-EU-1) INCOMPNOCE	GATE	157

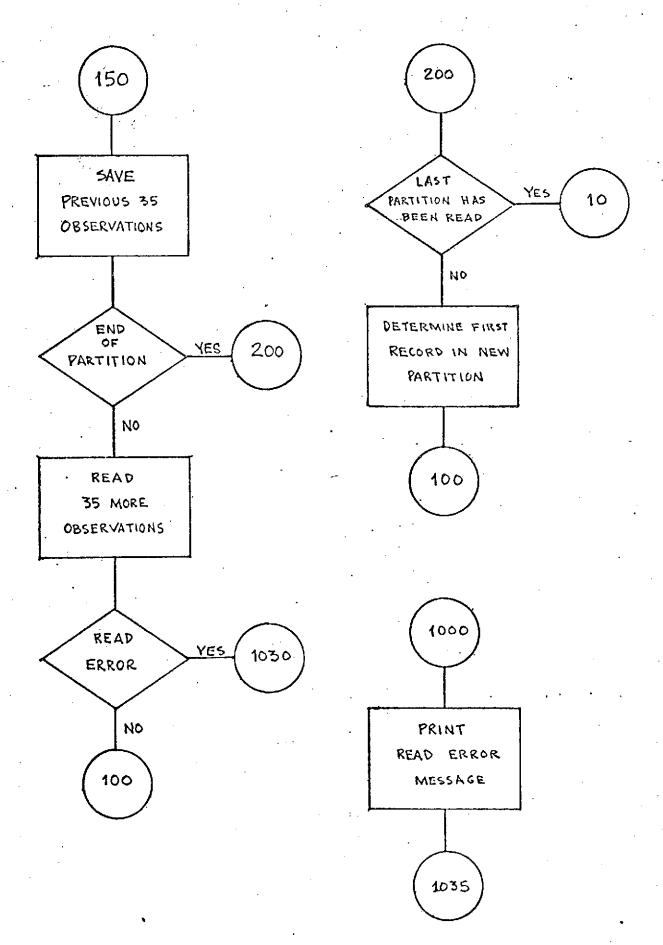
GD TO 10C C FRINT ERROR MESSAGES 1000 WRITE(OUTF, 2000) J GD TO 1025 1010 WRITE(OUTF, 2010) ISATID 1010 WRITE(OUTF, 2010) ISATID 1020 WRITE(OUTF, 2020) ISATID GD TO 1025 1030 IERREIERF! WRITE(OUTF, 2030) ISATID. CATB 177 LF(1ERR, LT+10) GO TO (1040, 150), LABEL WRITE(OUTF, 2030) ISATID, LABEL WRITE(OUTF, 2040) RECORD, MFEC CATB 179 WRITE(OUTF, 2040) RECORD, MFEC CATB 179 CATB 180 CATB 179 CATB 181 CATB 179 CATB 181 CATB 182 CATB 183 CATB 183 CATB 184 CATB 185 CATB 186 CATB 187 CATB 188 CATB 189 CATB 189 CATB 180 CATB 181 CATB 183 CATB 184 CATB 185 CATB 186 CATB 187 CATB 188 CATB 186 CATB 187 CATB 188 CATB 1	•			
C FRINT CRNUM MESSAGES	•	** TO 100	CATE	163
1000 WRITE(GUTF,2000) J GU TO 1035 1010 MRITE(GUTF,2010) ISATID GU TO 1035 1020 WRITE(GUTF,2020) ISATID GU TO 1035 1030 IERR=IER6+1 WRITE(GUTF,2030) ISATID.1COUNT IF(IER6+LI-10) GO TO (1040+150)+LABEL WRITE(GUTF,2035) 1033 WRITE(GUTF,2040) RECCRC.MFEC C TAKE ERROR EAIT CAL_ ERROR(7+ESTART) 1000 IF(IRAKT-EG.KFART) NREC=NDREC RETURN 2000 FURMAT(IH1,20X,*UNAPLE TO READ DODS DATA BASE DATA DIRECTORY*/ 2010 FURMAT(IH1,20X,*UND DATA AVAILABLE FUR SATELLITE REDUESTED*/21X, 1 SATELLITE 10 IS*,19/21X,*NONAME EXECUTION TERMINATED*) 2020 FURMAT(IH1,20X,*UND DATA AVAILABLE FUR SATELLITE REDUESTED*/21X, 2020 FURMAT(IH1,20X,*UND DATA AVAILABLE FUR SATELLITE REDUESTED*/21X, 2030 FURMAT(IH1,20X,*UND DATA AVAILABLE FUR THE TIME PERIOD REGUESTED* 1 SATELLITE 10 IS*,19/21X,*NONAME EXECUTION TERMINATED*) 2030 FURMAT(IH1,20X,*UND DATA AVAILABLE FUR THE TIME PERIOD REGUESTED* 20413 190 20413 190 20413 190 20413 190 20413 190 20413 190 20413 190 20413 190 20413 FURMAT(IH1,20X,*ODDS DATA BASE READ ERROR DCCURED FOR*/21X, 20413 190			DATE	169
GU TO 1035 1010 MRITE (GUTF, 2010) ISATID GU TO 1035 1020 WRITE (GUTF, 2020) ISATID GU TO 1035 1030 IERREIERR 1 WRITE (GUTP, 2030) ISATID. ICOUNT IF (IERREIER 2030) ISATID. ICOUNT IF (IERREIER 2030) ISATID. ICOUNT WRITE (GUTF, 2030) ISATID. ICOUNT IF (IERREIER 2030) ISATID. ICOUNT IF (IERREIER 2030) ISATID. ICOUNT WRITE (GUTF, 2030) ISATID. ICOUNT IF (IERREIER 2030) ISATID. ICOUNT IN TAKE ERROR EXIT CALL ERROR (7, CSTART) IOAC IF (IERREIER 2040) RECCRD. MFEC GATH 163 GATH 164 RETURN ROOC FURMAT (IH1, 20x, 'UNABLE TO READ DOOS DATA BASE DATA DIRECTORY'/ DATA 183 GATH 104 2010, FURMAT (IH1, 20x, 'ND DATA AVAILABLE FUR SATELLITE REQUESTED'/21x, CATC 173 LINE SATELLITE IO IS', 19/21x, 'NONAME EXECUTION TERMINATED') 2010, FURMAT (IH1, 20x, 'ND DATA AVAILABLE FUR SATELLITE REQUESTED 'DATE 199 2020 FURMAT (IH1, 20x, 'ND DATA AVAILABLE FUR TIME PERIOD REQUESTED 'DATE 199 2020 FURMAT (IH1, 20x, 'ND DATA AVAILABLE FUR TIME PERIOD REQUESTED 'DATE 199 2020 FURMAT (IH1, 20x, 'ND DATA AVAILABLE FUR TIME PERIOD REQUESTED 'DATE 199 2020 FURMAT (IH1, 20x, 'ND DATA BASE READ ERROR DCCURED FOR'/21x, DATE 101	-		STAC	170
1010 MRITE (SUTF.2010) ISATID GU TO-1035 1020 WRITE (SUTF.2020) ISATID GU TO 1025 1030 IERREIERR*1 WRITE (SUTF.2030) ISATID.ICOUNT IF (IERR.LT.10) GO TO (1040*150).LABEL WRITE (SUTF.2035) 1033 WRITE (SUTF.2040) RECCRO.MFEC CATB 173 WRITE (SUTF.2040) RECCRO.MFEC C TAKE ERROR EXIT CALL ERROR(7: ESTART) 10AC IF (IRART.EG.KFART) NRECENDREC RETURN 2000 FURMAT (IH1.20X.*UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 21X.*ERROR CODE IS*.19/21X.*NONAME EXECUTION TERMINATED*) 1 SATELLITE ID IS*.19/21X.*UNAME EXECUTION TERMINATED*) 1 SATELLITE ID IS*.19/21X.*NONAME EXECUTION TERMINATED*) 2020 FURMAT (IH1.20X.*NO DATA AVAILABLE FUR SATELLITE REQUESTED */21X.* 1 SATELLITE ID IS*.19/21X.*NONAME EXECUTION TERMINATED*) 2030 FURMAT (IH1.20X.*NO DATA AVAILABLE FUR THE PERIOD REQUESTED */21X.*DATE 157 20473 FURMAT (IH1.20X.*NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED */21X.*DATE 157 20473 FURMAT (IH1.20X.*NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED */21X.*DATE 157 20473 FURMAT (IH1.20X.*NO DATA BASE READ ERROR DOCURED FOR*/21X.*DATE 157	1000		CATS	171
GU TO-1035 1020 WRITE(DUTF,2020) ISATID GD TD 1035 1030 IERR=1ERR+1 WRITE(BUTF,2030) ISATID.ICOUNT IF(IERR-LI-10) GO TO (1040*150), LABEL WRITE(CUTF,2035) 1033 WRITE(CUTF,2035) 1033 WRITE(CUTF,2040) RECORD.MFEC C TAKE ERROR EAIT CAL_ ERROR(7*CSTART) 10AC IF(IRAKT-EG.KFART) NREC=NDREC RETURN 200C FURMAT(IH1,20x,*UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 21 X.*ERROR CODE IS*.19/21X,*NONAME EXECUTION TERMINATED*) 2010 FURMAT(IH1,20x,*NO DATA AVAILABLE FUR SATELLITE REDUESTED*/21X, 1 *SATELLITE IO IS*.19/21X,*NONAME EXECUTION TERMINATED*) 2020 FURMAT(IH1,20x,*NO DATA AVAILABLE FUR SATELLITE REDUESTED*/21X, 1 *FOR*/21X,*SATELLITE*,19/21X,*NONAME EXECUTION TERMINATED*) 2030 FURMAT(IH1,20x,*NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED *DATA 190 2030 FURMAT(IH1,20X,*NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED *DATA 190 2030 FURMAT(IH1,20X,*NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED *DATA 190 2030 FURMAT(IH1,20X,*NO DATA BASE READ ERROR DOCURED FOR*/21X,*DATE 101			DATE	172
1020 WRITE(QUIF, 2020) ISATID	1010	·	DATH	173
1020 WRITE(OUTF,2020) ISATID	•			
GO TO 1025 1030 1ERREIERR+1 WRITE (DUIP, 2030) ISATID, ICOUNT IF (IERR, LI, 10) GO TO (1040, 150), LABEL WRITE (CUIF, 2035) 1033 WRITE (CUIF, 2035) CATE 179 CATE 170 CA	1020			
PATE 177 WRITE (DUTP, 2030) ISATID, ICOUNT IF (IERA, LI, 10) GO TO (1040, 150), LABEL WRITE (CUTF, 2035) 1033 WRITE (CUTF, 2035) 1033 WRITE (CUTF, 2040) RECORD, MFEC C TAKE ERROR EALT CAL_ ERROR(7, ESTART) 10AC IF (IRART, EG, KFART) NRECENDREC RETURN 200C FURMAT (IH1, 20X, 'UNABLE TO READ DODS DATA BASE DATA DIRECTORY'/ 21X, 'ERROR CODE IS', 19/21X, 'NONAME EXECUTION TERMINATED') 1 21X, 'ERROR CODE IS', 19/21X, 'NONAME EXECUTION TERMINATED') 2010 FURMAT (IH1, 20X, 'NO DATA AVAILABLE FUR SATELLITE REDUESTED'/21X, CATC 137 2020 FURMAT (IH1, 20X, 'NO DATA AVAILABLE FUR THE PERIOD REQUESTED ', DATE 159 2020 FURMAT (IH1, 20X, 'NO DATA AVAILABLE FUR THE PERIOD REQUESTED ', DATE 159 2030 FURMAT (IHC, 20X, 'OUDS DATA BASE READ ERROR DOCURED FOR '/21X, DATE 171	٠.			
THITE (BUTP, 2030) ISATIB. ICOUNT IF (IERA.LT.10) GO TO (IO40, 150), LABEL WRITE (CUTF, 2035) 1033 WRITE (CUTF, 2040) RECORD. MFEC C TAKE ERROR EXIT CALL ERROR (7, CSTART) 10AC IF (IRART. EG.KFART) NRECENDREC RETURN 200C FURMAT (IH), 20X, 'UNABLE TO READ DODS DATA BASE DATA DIRECTORY'/ 1	1033			
WRITE(CUTF, 2035) 1033 WRITE(CUTF, 2040) RECORD, MEC C TAKE ERROR EXIT CAL_ ERROR(7, CSTART) 10AC IF(IRART, EG.KFART) NREC=NDREC RETURN 200C FURMAT(IH1, 20X, *UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 21X, *ERROR CODE IS*, 19/21X, *NONAME EXECUTION TERMINATED*) 201J FURMAT(IH1, 20X, *NO DATA AVAILABLE HUP SATELLITE REQUESTED*//21X, CATO 177 1 *SATELLITE ID IS*, 19/21X, *NONAME EXECUTION TERMINATED*) 202J FURMAT(IH1, 20X, *NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED *, DATE 159 1 *FOR*//21X, *SATELLITE*, 19/21X, *NONAME EXECUTION TERMINATED*) 203J FURMAT(IHC, 20X, *OUDS DATA BASE READ ERROR DOCURED FOR*//21X, DATE 101				
WRITE(CUTF, 2035) 1033 WRITE(CUTF, 2040) RECCRO, MFEC C TAKE ERROR EXIT CAL_ ERROR(7, CSTART) 10AC IF(IRART, EG.KFART) NRECENDREC RETURN 200C FURMAT(IH1, 20X, *UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 1	•		-	
DATE 181 CAL_ ERROR EXIT CAL_ ERROR(7, ESTART) 10AC IF(IRART. EG. KFART) NREC=NDREC RETURN 200C FURMAT(1H1, 20X, *UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 1		WRITE(CUTF, 2025)	-	
C TAKE ERROR EXIT CAL_ ERROR(7; ESTART) 10AC IF(IRART*EG*KFART) NREC=NDREC RETURN 200C FÜRMAT(IH1,20X,*UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 1	1033	WRITE(CUTF.2040) RECERD.MFEC		
CALL ERROR(7*ESTART) 10AC IF(IRAKT*EG*KFART) NREC=NDREC RETURN 200C FURMAT(IH1,20X,*UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 1	Ç TAK			
RETURN 2000 FURMAT(IH1,20X,*UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 1				
RETURN 2000 FURMAT(IH1,20X,*UNABLE TO READ DODS DATA BASE DATA DIRECTORY*/ 1	1040	IF(IPART+EG+KFART) NREC=NDREC		
200 FURNAT (181, 20X, *UNABLE TO READ DOWN DATA SAUD DATA SAUD DATA 195 2010 FURNAT (181, 20X, *NO DATA AVAILABLE FUR SATELLITE REQUESTED */21X, CATO 137 1 *SATELLITE TO IS*, 19/21X, *NORANE EXECUTION TERMINATED*) DATE 186 2020 FURNAT (181, 20X, *NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED *, DATE 189 1 *FOR*/21X, *SATELLITE*, 19/21X, *NORAME EXECUTION TERMINATED*) CATE 190 2030 FURNAT (187, 20X, *OUDS DATA BASE READ ERROR DOCURED FOR*/21X, DATE 101		RETURN		_
2010 FURNAT (1H1,20x,'NO DATA AVAILABLE FUR SATELLITE REQUESTED'/21X, CATO 137 1 *SATELLITE ID IS',19/21X,'NONAME EXECUTION TERMENATED') DATE 166 2020 FURNAT (1H1,20x,'NO DATA AVAILABLE FUR THE TIME PERIOD REQUESTED ',DATE 169 1 *FOR'/21X,'SATELLITE',19/21X,'NONAME EXECUTION TERMINATED') DATE 190 2030 FURNAT (1HC,20x,'OUDS DATA BASE READ ERROR DOCUMED FOR'/21X, DATE 101	\$c0c	FURNAT (1+1,20%, UNABLE TO READ DONS DATA BASE DATA DIRECTORY	-	
1 *SATELLITE TO IS*, IS/21X, INCNAME EXECUTION TERMINATED*) 2020 FURMAT(THI, 20X, INC. DATA AVAILABLE FOR THE TIME PERIOD REQUESTED ', DATE 150 1 *FOR*/21X, *SATELLITE*, IS/21X, *NORAME EXECUTION TERMINATED*) 2030 FORMAT(THI, 20X, IOUDS DATA BASE READ ERROR DOCUMED FOR*/21X, DATE 101		1 Z1X, ERROR CODE IS 1, 19/21X; NONAME EXECUTION TERMINALED 1	-	
2020 FURNAT (THI-20x, 'NO DATA AVAILABLE FOR THE TIME PERIOD REQUESTED '.DATE 150 1	2013	FURMAT(1H1:20X: NO DATA AVAILABLE FUR SATELLITE REQUESTED //21X:		_
1 *FOR*/21x,*SATELLITE*,IG/21x,*NORAME EXECUTION TERMINATED*) DATA 190 2030 FORMAT(IFC,20x,*0005 DATA BASE READ ERROR DCCURED FOR*/21x, DATA 191		1 *SATELLITE TO IS*,19/21X, *NONAME EXECUTE IN TERMENATED*)		•
1 *FOR*/21x,*SATELLITE*,IG/21x,*NORAME EXECUTION TERMINATED*) DATA 190 2030 FORMAT(IFC,20x,*0005 DATA BASE READ ERROR DCCURED FOR*/21x, DATA 191	2020	FURMAT(THI-20X-ING DATA AVAILABLE FOR THE TIME PERIOD REQUESTED	V.DAIB	111
SOSO PORMAL (IECASON: ODDS ONLY DASC WOVE CLICK MERCADICS		1 *FOR*/21X, *SATELLITE*, IS/21X, *NIMAME EXECUTION TERMINATED*)	2413	190
	2030	FORMAT(1FC.20X. ODDS DATA BASE READ ERROR DOCURED FOR 1/21X.		
1 *SATEULITE (, 19/21X, (CATA RECORD NUMBER 15', 15/) DAIS 19/	•••	1 *SATEULITE (,19/21X, (CATA PECOPO NUMBER IS (,19/)		
PARS FURMATION OF ANY AND AMERICANTION TERMINATED DUE TO 1/21X. DATE 193	2035	FURNATION TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TOTA		-
4 *FACESSIVE DODS DATA BASE READ ERBORS**		1 * FACESIVE DODS DATA BASE READ ERRORS!!		-
0000 COMMATERERALICATION 20.1X.20.2X.28.1X.28.1X.28.1X.28.2X.28.1X.28.1X.28.1	2010	FanMAT (151/(10x,20,1x,20,0x,20,1x,20,4x,20,1x,20,2x,20,1x,20))		
END CATS 126	F	CN3	CATS	1.2€

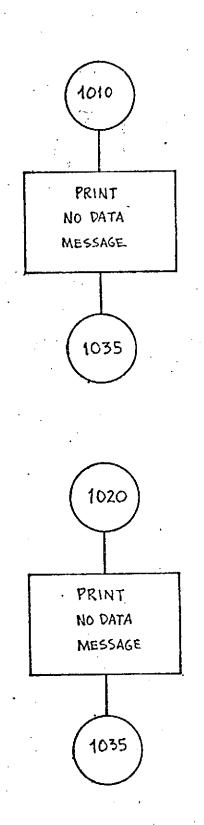


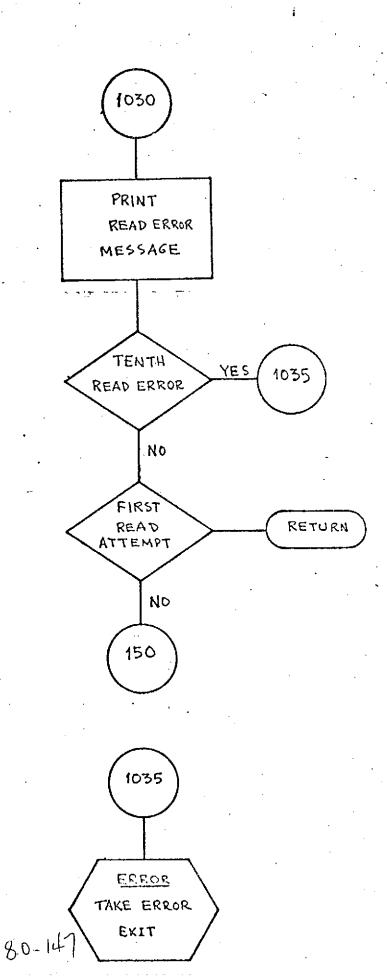




8 0-115







NAME	DATES
PURPOSE	TO CONVERT DAYS ELAPSED FROM JAN 0.0 OF THE ARC REFERENCE YEAR INTO A 3 WORD DATE OF THE FORM : YYMMDD HHMM SEC
CALLING SEQUENCE	CALL DATES(DAYNR, IYMD, IHM, SEC)
SYMBOL TYPE	DESCRIPTION
DAYNR UP	INPUT - DAYS ELAPSED FROM JAN 0.0 OF THE REFERENCE YEAR
I AWD I	OUTPUT - YEAR. MENTH. DAY IN THE FORM OF YYMMDO
IHM I	OUTPUT - HOUR, MINUTE IN THE FORM OF HHMM
SEC R	OUTPUT - SECONDS
SUBROUTINES USEC	ACDYMO TDIF
CCMYON BLUCKS	CTIME
INPUT FILES	NONE
	NONE

	SUBROUTINE DATES (DAYNR . TYMD . THM . SEC)	•	DATE	31
	DOUBLE PRECISION DAYNE . S. CAY . SEC		CATE	32
	COMMONICTIMENEATREF(22).IY	• •	DATE	33
_	CONVERT TO GIC TIME SYSTEM		CATE	34
_	. EAY=UAYMA+(CELL(TDIF(3.4.EAYMR))+1.00-3)/3.6404		DATE	3.5
c	ICAY=UAY-1.00		SATE	3 -
	1YMD=1Y+1C0C0+101		CATE	37
	CALCULATE YEARAMONTHADAY OF INTEREST		. DATE	15
	CALL ACCYMO(TYME: TEAY)			39
c	CALCULATE NUMBER OF SECONDS REMAINING	- ODUCIBILITY OF THE	DATE	A.C.
	5=J.6+C4+(DAY-DFLDAT(IDAY+1))	REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR	DATE	41
	ISuC=a	ORIGINAL PAGE IN TO	DATE	42
_	CONVERT TO HOUR /MINUTE FORMAT	Otor	STAC	43
•	IHM=60*(ISIC/3600)+ISEC/60		CATE	٠.٨
c	REVAINING SECONDS		CATE	4 5
•	54L= S-CFLL4T(60*(15EC/60))-1.90-6		DATE	46
	KETURN		DATE	47
	END		- DATE	ላ ጎ

NAME TO COMPUTE A DATE. DAY. NUMBER OF YEARS. AND TIME PURPOSE OF DAY IN SECONDS FROM A GIVEN TIME IN DAYS FROM JAN O.C OF REFERENCE YEAR CALL DAYEAR(DAY, IYMD, IDAY, ISEC) CALLING SECUENCE DESCRIPTION TYPE SYMBÖL INPUT - DAYS ELAPSOE FROM JAN C.D OF THE REFERENCE DAY DP YEAR INFUT - YEAR, WONTH, DAY IN THE FORM OF YYMMOD I WID RASY TO ASSMUR YAR, - TURTUD IDA Y OUTPUT - FRACTION OF LAY CONVERTED TO INTEGRAL I Sa C SECCNOS DIFF SUBROUTINES USED DATES COMPON BLOCKS V C NT INPUT FILES PHOM NORE OUTPUT FILES

DAYEAR

SUBROUTINE DAYEAR(DAY . IYMD . IDAY . ISEC) . . DAYE 32 DAYE REAL #8 DAY . SEC CAY CALL DATE SCDAY . I YMD . I HM . SEC) DAYE < 35 JAN0=1YND /1 C000 *1 C000+100 SYAG 36 IHMS=IHM+10C+ICINT(SCC+C+5D0) CALL DIFF (JAND. G. IYMC . IHMS . ICAY . IST C) DAYE 37 DAYE 3 :: FU TURN DAYE 35 END

NAHE

DELTAZ

PURPOSE

TO COMPUTE THE Z CCCRDINATE OF A POINT OF GIVEN

LATITUDE ON THE ELLIPSUID

CALLING SEQUENCE

X = DELTAZ(SUBLAT)

SYMBOL TYPE

DESCRIPTION

SUBLAT DP

INPUT - LATITUOL OF POINT ON THE ELLIPSOID

SUBHOUTINES USED NONE

COMMON BLOCKS

CONSTS

INTBLK

INPUT FILES

NENE

OUTPUT FILES

NONE

COUBLE PRECISION FUNCTION DELTAZISUBLAT IMPLICIT REAL+8(A-H+C-Z) LOCICAL NOTEST " COMMONICONSTSIDEL ARTWORK ARTORSEC COMMANDINITH KITHOUTS(3) .GH.AE.AESQ:FLAT:FSQ32(59) DATA NOTISTA.FILSE./ IF (NOT1 ST) GO TO 10 NOTEST# . TRUE . F1=1.00 C-FLAT F150=F1*F1 FEF=FLAT*(2 + CO OHFLAT) 10 SPSI=DSIN(SUBLATELEG2RD) 5P 51 50 = 5P 51 4#2 . EARTH=AE #F1 /D SORT(F1 SOFF2F #SFS1SC) DELITAZ= SPSI # TARTH PE TUEN END .

CTLT DSLT DELT

⊃ELT

CELT

DELT

ひだしょ

DELT

DELT

DELT

DELT

DELT

DELT

DELT:

DELT

PELT

24

25

76

27

56

56

30

31

32

33

34

3 5

Зć

37

36

39

DENSTY

DESCRIPTION

DENSTY is a real valued function whose value is the atmospheric density at a given time for a given satellite position. Additionally, DENSTY computes the partial derivative of the atmospheric density with respect to the spheroid height.

The density model used is the Jacchia 1971 Static Density Model. A thorough mathematical description and a list of references are provided in the GEODYN Systems Description, Volume I.

DENS

PENS

4 1

42

NAME DENSTY

THE FUNCTION DENSITY COMMUTES AN ATMOSPHERIC DENSITY WHICH IS DEPENDENT UPON HEIGHT, TEMPERATURE, AND SEASONAL LATITUDINAL VARIATIONS. TEMPERATURE IS DEPIVED FROM THE JACCHIA 1971 MODEL AND IS DEPENDENT UPON THE FOLLOWING:

- 1. SOLAR ACTIVITY
- 2. GEDWAGNITIC ACTIVITY AND
- 3. DIBRNAL PULGE

SEMIANNUAL VADIATIONS OF DENSITY ART EXPRESSED AS 1940 TO THE SEED ARE THE CONTROL OF THE SEASONAL LATITUDINAL VARIATIONS OF THE LOWER THERMOSPHERE AND HELIUM

CALLING SECTIONCE X=DEMSTTY (RASAT)

STABLE TYPE DESCRIPTION

PASAT DO INDUT - PIGHT ASCENSION OF SATELLITE

X 3 DUTPUT - ATMOSPHERIC CENSITY - CILOGPAMS/METERS##3

SUBFOUT INES USED CPHEM. YMDAY

COMPAND PLACES CEPHEN CONSTS FLXALK XY7 CTIME

TRICALK INTALK

INDUT FILES NONE

CUTPUT FILER: NONE

RESTRICTIONS NONE

REFERENCES *GEDDYN SYSTEMS DESCRIPTION*
VOLUME 1 - GEDDYN DOCHMENTATION

FUNCTION DENSTY (PASAT)

C UPDATED AS OF APPIL 1972

REPRODUCIBILITY OF THE

ORIGINAL PAGE IS POOR INCLICIT REAL+8 (A-H+G-Z) DENS 47 DOUBLE PRECISION KRYKER-LNIC (DE NS 44 45 INTEGES DROES, START DENS DENS 41. LOGICAL NOTIST COMMON/CHOMEN/G3 (4). UV3UN(4).G4(AAC) DENS 47 DENG A R COMMUNIC INSTRAPTATION FARADAR SEC COMMONATE KREKAAVELX (6.7%) + DEL XC 6.7%) + XR 6.7%) + XR 6.7%) ひとがい CDV4DN/KY7/X4Y47400TS(5)4R4F3041SAT41F09CF(2) 50 DENS CHANDONCL I NENDYL PAB " DZLYG L [2 1" DV A I " [DVA A J A (1 3) DF NS 4 e a CHANNAN IMMOFENIAL COSTSO.CTA1.POOTE1.DOGAG DE 415 e 2 DENS CD4V3N/19119W/191040139T4192(9) D[VCMS] (4) DA(3).CC(3).TC(3).TXPKP(7).AC[11/).H(48).AA(37).HG(2/) 5.4 17F MS EQUIVALINGE (AA(1).A(65)).(PP(1).P(49)) 5,5 DENS

```
DENS
                                                                                   56
      EQUIVALENCE (POPHOD+C(11))
                                                                                   57
                                                                            DENS
      DAT A BETA, GAMA, PX, P/+0.645771823237700,0.750491578357400.
                                                                                   50
                                                                            DENS
         5.300.0.104719755119600/
                                                                                   50
    DATA EPRIL . HEAVEG. C. 4011051666700 . 1.6645 9999630-23/
                                                                            DENS
                                                                                   60
                                                                           DE NS
      DATA PIA.SIND/C.7853981633974500.J.3535533995932700/
                                                                                   61
                                                                            DENS
      DATA 0JJL50/2423281+500/
                                                                                   62
                                                                            DENS
      DATA ANGLATIC. 26179936779800/
                                                                                   63
                                                                            DENS
      DATA NEZIZ
                                                                        DENSDENS
                                                                                   44
C TEMPERATURE CHEFFICIENTS FOR DENSITY AT DIFFERENT HEIGHT RANGES
                                                                                   45
                                                                            DENS
      DATA A/
                                                                            DENS
                                                                                   66
C 90 CHT < 210
                500KTK1900
     .0.422CRx1650+01.0.9839283440-05.-.6.95212770-25.0.1471533540-03.
                                                                            DENS
                                                                                   67
                                                                                   68
     •=•2013430560+00•-•234119944D-03•0•153367112D-06•-•346749274D-10•
                                                                            DENS
                                                                                   40
     •0•735913150D-03•0•169641389D-05•-•115604139D-03•0•250368533D-12•
                                                                            DENS
                                                                            DENS
                                                                                   7:
     •#•12087+3620-05,-+343599888D-08,0.2245708330+11++.510691411D+15+
                                                                            DENS
                                                                                   71
C 200KHT<500 500KTK800
     ....12838*5330+02.(.4070998200-02.0.9707406610-05.-.106425186D-07.
                                                                            DENS
                                                                                   72
                                                                                   7.7
     .O. 9 2282 3700+01.-.7121502920-03.7.2654264830-06.-.5519332380-10.
                                                                            DENS
     •=•f595051460=03•3•2440152170=05•=•270561417)=08•0•3930319670=12+
                                                                            DENS
                                                                                   74
     *3*110527529D-05*-*418671733D-08*0*5051712120-11*-*204837314D-14*
                                                                            PENS
                                                                                   75
                                                                             DENS
                                                                                   76
                300CT<1900
C 200KHTK500
                                                                                   77
     ***84595}3229+J1***150C1455CD-03***6264C1948D-C6*0*8451185ACD+A9*
                                                                            DENS
                                                                             DENS
                                                                                   72
     . -. 28304 31310-01.C.1776114330-05.C.613977139D-08.-.2336154120-11.
     . • 0 • 5 5 9 9 7 8 7 3 6 0 - 0 5 • U • 7 7 4 6 1 2 2 3 2 D + 0 7 • - • 5 9 4 9 2 0 4 4 C O - 1 C • C • 1 4 9 2 0 5 0 3 2 D + 1 3 •
                                                                             De 45
     . 0.194341346D-98.-.764352159D-10.0.5P3325559D-13.-.145951773D-16.
                                                                             DENS
                                                                                   A C
                                                                             DENS
                                                                                   81
                500<T< 900
C SCCKHTK1000
     ###7765870520402.C.1672711980400.--.5657018265-04.-.5042399469-67;
                                                                             DENS
                                                                                   P2
                                                                                   27
     .0.3053P19930+00.-.989363990D-07.0.749319718D-06.-1531782724D-10.
                                                                             DENS
                                                                                   PΔ
      •-•7893435570-03.0.1297261930-05.-.107764650D-08.0.141909307D-12.
                                                                             DENS
      .O.159620796D-06.-.540489521D-09.0.467085971D-12.-.718864688D-16/
                                                                             DENS
                                                                                   85
                                                                             CENS
                                                                                   n A
      DATA AA/
                                                                             DENS
                                                                                   87
C 500KHTK1000
                 900<7<1900
      .D.S()81170804024-.126612361D400.0.828957294D-04.-.182762489D-07.
                                                                             DENS
                                                                                   2 4
                                                                                   93
      ****3057102100+30.00470574550-33.-.414425867D-06.0.9139592980-10.
                                                                             DENS
      .0.417663560D-03.-.8874Z9188D-06.C.610397456D-09.-.136339086D-12.
                                                                                   on.
                                                                             DENS
      • - • 17964 > 11 AD - 06 • 6 • 39 3 8629 18D - 09 • - • 2763926920 - 12 • 0 • 626491 4390 - 16 •
                                                                             DENS
                                                                                   O t
                                                                             DENS
                                                                                   02
C 1000KHTK2500
                  500<T<300
      *3.3653213630+02+--26154325CD+00+0+4156739640-03+-+0165121119-06+
                                                                             DENS
                                                                                   0.3
      .+.4835Z1370D-01.0.269014314D-03.-.4821355580-06.0.270952542D-09.
                                                                             DENS
                                                                                   04
      •0•111413512D-04•--774337756D-07•2•1664236773-69•-•296549857D-13•
                                                                                   25
                                                                             DENS
      ---250589005D-10.0:447247686D-11.--140853837D-13.0.104429402D-16.
                                                                             DENS
                                                                                    0.5
                                                                             DENS
                                                                                    97
C 1000KHTK3501
                   3004141900
      +0.524101209D+02.-.206534686D+00.0.2164156170-03.-.9062287610-07.
                                                                             DENS
                                                                                    0 0
                                                                             DENS
                                                                                   qq
     . .0.1305413230-10.
      ·-·1435455870+0:.c.431173459D-03,-.4613652403-06.0.201788671D-09.
                                                                             DENS 161
                                                                             PÉNS 101
      .-.209882553D-13.
      +0+67-923455D-04,--27155859CD-06+0+297450608D-09++4134249885D-12+
                                                                             DENS 102
                                                                             DENS 103
      .3.21369h3420-16.
      .-.1571(>+340-07.0,4963)6683D-10.-.552974078D-13.0.25A318298D-16.
                                                                             DENS TOA
                                                                             DENS 105
      ·--4130279740-207
                                                                             DENS 106
C TEMPORATURE CORFETCIENTS FOR HELIUM NUMBER DENSITTES
                                                                             Dane iss
       CATA DZ
                                                                             LENG ...
 C 5214HTK1110
                  501<*<800
                                 HEL LIM
      . t. agrijtikkiino 1. m. 528 g38 g38 g370-1 t. t. 629919(025-05---704706492)-09.
                                                                             アテルち しぐり
      ---1314075050-01.J.3181432649-04.-.3299769449-07.0.1257251200-19.
                                                                             DENS 110
      DENS 111
```

```
DENS 112
     --.5215622520-09.0.1905532270-11.-.2657933900-14.0.125348645D-17.
                                                                                DENS 113
C 500<ht<1000
                 3C CCT < 1900
                                 HEL IUM
     + 3.43 413 75 4 10 + 0 1. -. 16 4 23 39 51 D + 0 2.0.78 631 9 A 720 - 9 6. - + 1 4 32 2 7 3 8 P 0 + 0 9.
                                                                                PENS 114
     .+.fg:k9u1910-32.5.841352u44D-35,-.44577; 3453-65,-356271187D-12.
                                                                                DENS *15
                                                                                DENS 116
     .0.1051034730-05.-.126608705D-08.0.71137e6110-12.-.141795819D-15.
                                                                                DENS 117
     . -- . 1 2 2 2 2 2 7 3 9 0 - G 9 . C . 1 4 7 4 5 2 8 6 2 D - 1 2 . - . 9 7 6 5 7 9 3 7 5 5 - 1 6 . C . C 1 4 5 8 3 1 5 C D - 1 9 .
                                                                                DENS 118
C 1000 CHT <2500
                  300 < T < 8 0 0
                                    HEL LUM
                                                                                DEMS 119
     . 0.9134571260+01.-.434995717D-02.0.4029204500-05.-.1453154360-08.
                                                                                DENS 120
     ---: 22E 124690-0:-0:2798:9098D-04.--27972:363D-27.0.1037093654D-14.
     .0.153929378D-05.-.358628514D-03.0.3547612740-11.-.129353194D-14.
                                                                                DENS 121
                                                                                0645 122
     ***1182483040+09.0.254 378003D+12.+.252265 7630+15.0.3971361009+19/
                                                                                DENS 123
      DATA BOZ
                                                                                DENS 124
C 1000KHT<2501
                                    HE_ IUM
                  800 < T<1900
                                                                                DENS 125
     .p. 861202304D+01+-.253633341D-02.C.199793214D-15.+.7369615197-09.
                                                                                DENS 125
     .C.113377755D-13.
     . - . 8484715420-02.0.1408366930-04.-.1138574150-07.0.1487054680-11.
                                                                                DENS 127
                                                                                DENS 12A
     a-1693642377D-151
                                                                                DENS 130
     .j.1543:751D-05.-.198838969D-08.0.166354361D-U1.+.576277769D-15.
                                                                                DENS 130
     *C*137357450D-18*
                                                                                DENS 131
     .-. 045237301C-10.0.17387C019D-12.-.153670377D-15.0.654015903D-19.
                                                                                DENS 132
     .-.1376343310-22/
                                                                                DENS 123
   INITIALIZE DINSITY CORRECTIONS
                                                                                BENS . 34
      HELIUM=0.JOC
                                                                                DENS 135
      DENS=9.000
                                                                                DENS 134
      DO 310 J=1.9
                                                                                DENS 137
  500 C(J) #0. DO
                                                                                DENS 138
      IF(NOTISE) GO TO 1
                                                                                DENS 139
     . DAY53=YMDAY(500100.0.0.0000)
                                                                                DENS 140
      FDSPI=4.100*PI
                                                                                DENS 141
      LN11=0L3G(10.000)
                                                                                DENS 147
       INC 3=-1
                                                                                DENS 143
       IX:=-1
                                                                                DENS '44
       1 × 1 = - 1
                                                                                DENS 145
       1X2=+1
                                                                                DENS 146
       NOTIST=.TRUE.
                                                                                DENS 147
    1 HT2=HT41.00-3
                                                                                DENS 4P
       HT=HT#1.0-5
       IF(HT.1,1.25.000) GO TO 10
                                                                                DENS 140
                                                                                DENS 150
       DENSTY=1.000
                                                                                DENS 151
      RETURN:
                                                                                DENS 152
   10 ID=CATASP
                                                                                DENS 153
       DAYS=DAYI-ID
       IX=DAYS+1.500
                                                                                 DENS 154
                                                                                 DENS 155
       #F( 1x . LT . 1 ) [x=1
       [F(IX.GT.673] IX#673
                                                                                 DENS 156
                                                                                 DENS 157
                                                                                DENS 158
       IF(IX.ED.IXI) SD TO 20
                                                                                 DENS 150
                                                                                 DENS 160
       IF([X.FO. [X2] GO TO 12
                                                                                 DENS 161
       TE(IX.En.IXQ) GD TD 14
       J=1
                                                                                 DENS 162
                                                                                 DENS 163
       K ≃ ∵
                                   REPRODUCIBILITY OF THE
       50 TO 11
                                                                                 DENS 164
                                   ORIGINAL PAGE IS POOR
                                                                                 PENS 165
    12 PA(1)=PA(2)
                                                                                 DENS 166
       00(1)=00(2)
                                                                                 DENS 167
       TC(1)=T1(2) -
```

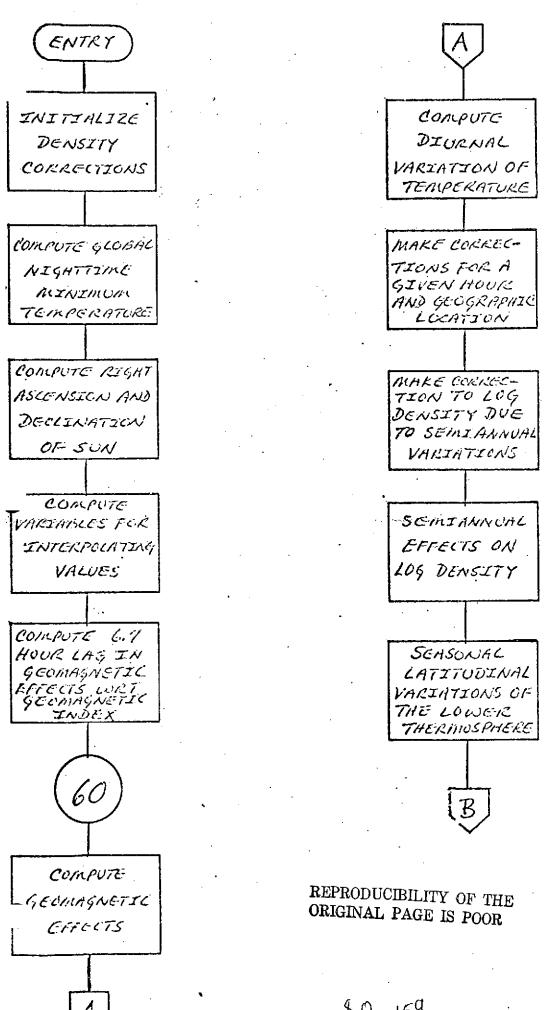
```
DENS 168
      IX=IX+1,
                                                                             DENS 169
      J=2
                                                                             DENS 172
      GO TO 14
                                                                             DENS 171
   14 RA(2)=RA(1)
                                                                             DENS 172
      DC(2)=DC(1)
                                                                             DENS 173
      TC(2)=TC(1)
                                                                             DENS 174
      J=1
                                                                             DENS 175
   16 IK0=I-I
                                                                             DENS 176
      IX ) = I
                                                                             DENS 177
      1+1=5x1
                                                                             DENS 178
   15 CONTINUT
                                                                             DENS 179
C COMPUTE SLOBAL NIGHTTINE MINIMUM TEMPERATURE AT 12 HOURS GMT
                                                                             DENS 180
 DAILY SCLAP FLUX VALUE USED IS FOR DAY EARLIER
                                                                             DENS 181
      TC(U)=379.305+3.2405 # AVFEX(IX+1)+1.300#(DFEX(IX)-AVFEX(IX41))
C COMPUTE RIGHT ASCENSION AND DECLINATION OF SUN AT 12 HOURS SMI
                                                                             DENS 182
                                                                             DENS 183
      FDAY=ID+IX-1
                                                                             DENS 184
      CALL EDHTM(FCAY. FALSE.)
                                                                             DENS 185
      ((E) PURVU) NI 29AD=(U)OD
                                                                             DENS 186
      (1) MURVUM (2) MURVUM SMATACE (L) AS
  COMPUTE VARIABLES FOR INTERPOLATING VALUES. . .
                                                                             CENS 187
      IF(K.E0.1) GO TO 19
                                                                             DENS ! AP
                                                                             DENG JRG
      1x=1x+1
                                                                             DENS 193
      J=2
      K=1
                                                                             DENS 191
                                                                             DENS 192
      GO TO 15
   19 RA(3)=R4(2)-RA(1)
                                                                             DENS 193
      DC(3)=DC(2)+DC(1)
                                                                             DENS 194
                                                                             DENS 195
      TC(3) = TC(2) - TC(1)
                                                                             DENS 196
   20 FDAY=DAY1~DFLOAT(ID+I~1)
                                                                             DENS 197
      DECS=DC(1)+DC(3)#FDAY
      PAS=RA(1)+PA(3)±FDAY
                                                                             DENS 198
                                                                             DENS 100
      T3=TC(1)+TC(3)*FPAY
   COMPUTE 6.7 HOUR HAG IN GEOMAGNETIC EFFECTS WRT GEOMAGNETIC INDEX
                                                                             DENS FCC
C GERMAGNETIC INDEX IS REFERENCED TO 18 HOURS GMT
                                                                             DENS PC1
      DAYLAG=DAYS-1.27916666666600
                                                                             DENS 202.
      IDAY1=PAYLAG+1.000
                                                                             DENS 203
      FDAYI=DAYLAG-DFL DAT(IDAY:-1)
                                                                             DENS 204
      S#FDAYL COFLOAT (N3)
                                                                             DENS FCS
      INT 1 = S
                                                                              DENS CCA
     - [NE] = [DAY1 * N3+ [NT1 + 1
                                                                             DENS 207
      IF(IND3.E0.IND1) GD TO 60
                                                                             DENS PCS
      IF(IND3._T.0) EXP(P(2)=CCXP(KP(IND1))
                                                                              DENS 209
      EKPKP(1) = EXPKP(2)
                                                                              DENS 210
      EXPKP(2)=DEXP(KP(INDI+I))
                                                                              DENS 211
      ICMI=IND1
                                                                              DENS 512
C. COMPUTE GEOMAG EFFECTS. IF ALTITUDE IS LOWER THAN 200 KY USE HYBRID
                                                                              DENS 213
   FORMULAS. GROWAGETHME. CORRECTION***DENMAGELOG DENSITY CORRECTION
                                                                              DENS 214
   65 SESHOPLOAT (INTI)
                                                                              DENS 215
      KP3 #KP(INDI)+S*(KP(INDI+!)-KP(INPI))
                                                                              DENS 716
      EXPKP3\pm EXPKP(1)+Sk(EXPKP(2)+EXPKP(1))
                                                                              DENS 717
      [F(HT.LT.2.000) GD TO 30
                                                                              DENS 218
      GECMAG=13.500*KPZ+0.0300*EXPKP3
                                                                              DENS TIO
      DENMAGED . D 1200 * KP3+1 . 20-5 * C XPK REPRODUCIBILITY OF THE DENGEDENS + DENMAG
                                                                              DENS FOR
     . 40 77 72
   30 GE094G=: +. 300*KP3+C+C+C200*EXPKP3
                                       ORIGINAL PAGE IS POOR
                                                                              DENS 121
                                                                              DENS 123
                                                                              DENS 123
```

	32 CONTINUE	DENS 224
C	COMPUTE DIJENAL VARIATION OF TEMPERATURE	DENS 225
	HRANG=FASAT-RAS	DENS 126
	IF(HRANS.LT.0.DO)HRANG=HRANG+TWOPI	DENS 227
	PH I = 7/9	DENS 255
	· SPHI=PHI#PHI	DENS 229
	PHI=DAPSIN(PHI)	- DENS 230
	THFTA=0438 (PHI+DECS) * 0.5DC	DENS 231
	ET.4=DARS(PHI-DECS)*3.500	- DENS 232
	TAU=HRANG+BETA+PEDSIN (HRANG+GAMA)	DENS 223
•	CE=0COS(ETA)**2.200	DENS 234
	ST=DSIN(THETA)=#2.200	DENS 235
	STT =1 . COC+RX+ST	DENS 235
	(I POW T. IROW I. LUAT) COM G= UAT	DENS 237
	1F(TAU.ST.PI) TAU=TAU=TWOPI	DENS 938
	CT=DCOS(TAU*0.500)	DENS 239
	CT=CT **?	DENS 240
c	COSSECTION FOR A GIVEN HOUR AND GEOGRAPHIC LOCATION	DENS 041
	TL=(T3*STT)*(1.CD)+RX*(C5-ST)/STT*CT)	DENS 242
	TEN=TL+GEOMAG	DENS 743
	TEV4=TFV4#4	DENS 244
c	MODIFIED JULIAN DATE OF 26204 IS JAN. 1. 1759	DENS 245
-	0.000.00 C C C C C C C C C C C C C C C C	DENS PAS
	PHASE=(1-36204.00)/365.242200	DENS 947
c	CORRECTION TO LOG OF DENSITY DUE TO SCHLANNUAL VARIATIONS	DENS 248
-	F7A=-2.983D-3*HT2	DENS 243
	IF(F7A.LT2C.ODC)GD TO 33	DENS 250
	EXPEZA=DCXP(FZA)	DENS 251
	Mis31=H12 ##1 +3 3100	DENS 252
	FZ=(5.0750~7#(HT2*H1321)+0.0632800)#FXPFZA	DENS 757
•	DF7DZ=+2.3680-3*FZ45.6760-7*2.33101041331*5XPF7A	DENS 254
	PH=TW901*0HAS5+6.07500	DENS 255
	OH=DM9D(PH-T,H9)	DENS 256
	-SP= (0.Eng+0.500*DSlN(PH))**1.6500-1.500	DENS 157
	TAUT=PH135F+0.00544D0#50	DENS 258.
	TT2=TW0 PI 4TAUT +4 .1 3700	DENS 259
	TT2=OMO)(TT2,TWQPI)	DENS 760
	TT4 =50821 #TAUT +4.25900	DENS #61
	TT4 = T MOD (T T4 + T WOPI)	DENS 762
	GT=0.0293500+0.381700*(1.00+0.467100#0SIN(TF2))*0SIN(TT4) / 📐 /	PENS 963
· c	SEMIANNUAL SEFECTS ON LOC DENSITY	DENS 264
•	PPO[2]=CT*DFZDZ	DENS 265
	DENS=DENS+FZ*GT	DENS 266
C	SEASONAL LATITUDINAL VARIATIONS OF THE LOWER THERMOSPHERE	PENS 267
	33 [F(HT.6T.1.6F0) GD TD 40	DENS 268
	HT50=HT3-90.CD0	. DENS 269
	HT9050=-IT90**2	DENS 270
	EXS=-0.00130C*HT90S0	DENS 271
	[F(EXS-LT20.00) GD TD 40	DENG 272
	5\$=0.(140)#0EXP(FXS)	ひという ツブス
	PH=Tx 3P1 *PHASE+1+7290	DENS 274
	PH= DMOD (PH + TWOPI)	DENS 275
	bo=02Iv(oH)	DENS 174
	(1 H C+ COO+1) FD 1 FC = PD 1 H P	DENS 277
	75NLAT=35+PH [A45 @20 5P4]	DENS FTH
	PPO(3)=DEMEAT*(1.000-0.002600*HT9050)	DENS 279
	· ·	

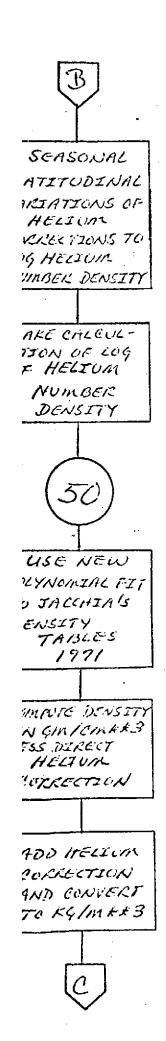
•			
	CFTH*TAJMEC=TAJMED	•	DENS PRO
	DENS#DEMS+DENLAT		DENS 281
4.1	CONTINUE	•	DENS SES
C SE	ASCNAL LATITUDINAL VARIATIONS OF HELIUM		DENS PAT
C	COPRICTIONS TO LOG HELIUM NUMBER DEASITY		DENS 284
	16(HT.LF.5.000) GO TO 50	•	DENS 185
	IF (HT.GT. T.ODO .AND .HT.LT. R.ODO .AND . MASS(PHI).LT. ANGLAT) GT TO 50	DENS 285
	ARG=P14-PH1*0.50C#DS1GN(1.0D0.DFCS)		DENS PAT
	SN=DSIN(ARG)	•	DENS 284
	SN? = SN + + ?		DENS 199
	DECLP=DECS/EPSIL		DENS 393
	HELDG=0.05DD#DARS(DECLP) * (SNR-SIN3)		DENS 391
C CAL	CULATION OF LCG OF HELIUM NUMBER DENSITY		DENS 293
	START=C		DENS 293
	ORDER=4	S - 1	DENS 994
•	IF(TFM.3T.8.CD2) GD TC 42		DENS TOS
	1F(HT.LE.10.0D0) GD TG 45		DENS 596
	START=32		DENS 297
	GD TO 43		DENS 203
42	START=15		DENS 299
	IF(HT.LE.10.CDC) GO TO 45		DENS TOT
	START=43		DENS 701
	ORD EP=5		DENS 303
45	K#START-ORDER		DENS TC3
•	DO 55 J=1+4		DENS 704
	K#K+OFFFF		DENS 305
55	C(J)=8(K+1)+TEM#(8(K+2)+TEM#(8(K+3)+TEM#8(K+4)))		DENS 726
	1F(DPDF3.LT.5) GO TO 59	-	→PENS 307
	K=START		DENS 303
	DO 56 J=1.4		DENS TOO
	K=k+390€0		D5M5 310
56	C(J)=C(J)+TEM4+8(C)		PENS 711
. 59	HEFNCT=C(1)+HT2*(C(2)+HT2*(C(3)+HT2*C(4)))	•	DENS 712
	PPO(5)=1(2)+(2.00)+C(3)+3.00)+C(4)+HT2)+HT2:		DENS 113
	HFL OG=HFLOG+HEFMOT		DENS 714
	HEL 18M= (10.000 hx (HELD G)+10.000 xx (HERNCT) 14 HEAVING		DENS TIE
50	CONTINUE	•	DENS TIA
c usi	E NEW FOLYNEMIAL FIT TO JACCHIA'S DENSITY TABLES 1971		DENS 217
	\$TART=(DENS 319
	ORCCR=4		DENS 319
	IF (HT.LI.2.3CQ) GD TO 65		DENS 32
	IF(TEM.3T.9.CD2) GO TO 62		DENS 721
	START=15		DENS 722
	IF(00.65.5.000) 60 to 65		DENS 223
	START=4 4	•	DENS 724
	IF (HT.L T. 1.001) GD TO 65	•	DENS 725
	START=9:		DENS 325
	60 10 65		DENS 327
62	START=3?	-	PENS 326
	IF (HT.LT.5.000) 60 TO 65		DEN2 255
	START=6.		DENS 330
	1F (HT.LT. 1.201) GO TO 75		DENS THE
	STADTECS	•	Devic also
	nonenes	,	DENS 333
65	K=START-000ER		DENC 334
	00 73 J=1+4		DENG 335
	•		F C 14 25 1 2 2 2

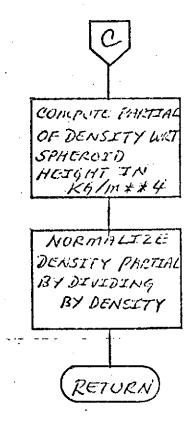
		K=K+OBD#B	DI	NS	335
	73	C(J)=A(<+1)+TEM*(A(<+2)+TEM*(A(K+3)+TEM*A(K+4)))	. 08	NS.	2,77
		IF (DRDER.LT.S) GO TO 83	9.0	NS	238
		K=START	0.0	INS	770
		DO 75 J=1.4	DE	NS.	740
		K#K+DROIR	D.	NS.	741
	75	C(J) = C(1) + TEM4 * A(<)	D.	ENS	342
		EXPT=C(1)+HT(*(C(2)+HT?*(C(3)+HT?*C(4)))	D)	ENS	743
	'- -	PPO(1)=0(2)+(2.000*C(3)+3.000*C(4)*HT2)*HT?	D)	. NS	344
~	COM	PUTE DONSTRY IN GMACK** LESS DIRECT HELLUM COFRECTION	Di	PMS	745
•		EXRIMP=10.CDO**(FXPT+DENS)	וח	145	745
_	ADD	HELIUM CORRECTION AND CONVERT TO KG/M**3	r-l	ENS	747
Ť	~~	DENSTY=(.003+(CXSJYP+FFLIUX)	DI	ENS	748
r	CCM	PUTE PARTIAL OF DENSITY WET SPHEROLD HEIGHT IN KG/M4#4	i)	FNS	740
•	C	POPH=EN13*(EXSUMP*(PPO(1)+PPO(3))+HEE1UV*PPO(5))	O:	ENS	750
_	KOD	MALIZE DANSITY PARTIAL BY DIVIDING BY DENSITY	jul.	HNS	751
_	176	POPHOD=7)PHZCENSTY	Ċ.	ë Ne	35?
		RETURN	L.	ENS	353
		END	Ð.	ENS	244

o N ነርሳ



8.0 - 159





37

39

30

40

4 1

42

4.3

44

45

44

47

4 0

40

50

- 1

5 3

53

54

5.5

DIFF

DIFF

DIFF

DIFF DIFF

DIFF

blee

DIFF

NAME DIFF TO CALCULATE THE DIFFERENCE RETWEEN ANY TWO TIME PUPPOSE POINTS IN THE 20TH CENTURY CAL_ DIFF(IYMD1. THMS1. TYMD2. THMS2. TDAY. ISEC) CALLING SECTENCE SYMERIL TYPE DESCRIPTION DOWNYY MADE IN FORM YYMMOD TYMD1 INPUT - TIME ON IMMOL IN FORM HHMMSS IHMS1 COMMYY MEDE NI STAC GROSS - TURNI IAMDS INPUT - TIME, ON IYMOS IN FIRM HHMMSS IHMS.2 OUTPUT - ELAPSED FULL DAY DIFFERENCE IDAY? TOAY IS MEGATIVE IF TYMOR. THMS2 IS THE EARLIER TIME ISEC HAS THE SAME SIGN CONVENTION AS IDAY SUPPOUT INCA JSED HONE DUTPUT - REMAINDER OF DIFFERENCE IN SECONDS ISEC COMMON BLOCKS MONT HS INPUT FILES NONE CUTPUT FILES **340**14 SUFROUTING DIFFCIYMDI.IMMS:.IMMO2.IMM92.IDAY.ISEC) DIFF COMMONIABALHS/MONIH(13+5) DIFF ISUN(IY) = MINU (MOD(IY, 4), 1)+1 DIFF C CHECK FOR A DIFFERENCE OF LESS THAN ONE DAY DIFF ISF C=0 IF (IY "D: . EQ. IY MD 2) GOTO 4000 DIFF C SEPARATE IYADI AND IYADE IATO THREE WORD EACH NIFF DIFF TY1=IYMD1/12000 DIFF ID1 = I YMD1 - IY1 * 16600 IM1=IO1/100 DIFF ID:=ID1-IM1*13C DIFF REPRODUCIBILITY OF THE 145=14いついろ16666 DIFF

100=14MD /- 14 3# 10 000

C COMPUTE THE PLANSER DAY STYCE JAN 2:1936

IMP ACT = 4- 526 * ([Y t=1] Z1 C+MONTH([M14L1]+10]

TYP AP2# (+825# (TY2-1)/T)C+MONTH(TM2+L2)+TP2

IM3 =102/100 IDC =100-142*100

L1=15UP(1Y1)

CZ=ISUP(TY2)

ORIGINAL PAGE IS POOR

A PRINCES OF ARCED DAVE THEO CLARCED SECONDS	,	DIFF	56
C CONVERT ELAPSED DAYS INTO CLAPSED SECONDS	•	DIFF	67
1SFC=(1754R2-1YEAR1) = 864C0	•	DIFF	£ 3
C CALCULATE CLAPSED SECONDS INTO EACH DAY		NIEE	53
4 COC 14F C1=14M21+40 * (IHM31 \ 10) 1 - 340 0 # (IHM31 \ 1 C000)		• •	= :
1SE C2=THVS 2-40 + (IHMS 2/1C2) - 24GC+ (IHMS2/1 GC10)		DIFF	60
C SUBTRACT THE TWO ELAPSED SECONDS VALUES		Dice	6 1
ISFC=ISFC+ISEC2-ISFCI	,	DIFF	6.2
C COMPUTE IDAY		DIFF	£ 3
• • • • • • • • • • • • • • • • • • • •		DIFF	64
IDAY=ISTC/8640C	*	DIFF	6.5
C CCMPUTE ISE1	,	ULLE	66
15F C=15CC 10AY+86400		DIFF	67
RETURN		•••	_
SAIP		Ditt	€ B

DINP DINR 37

38

FURPOSE	TO CONVERT ANGLES EXPRESSED IN APC MEASUREMENTS DE TIME MEASUREMENTS TO RADIANS	₹	
CALLING SEQUENCE		•	
SYMEDL TYPE	DESCRIPTION	:	
RAD DP	DUTPUT - CONVERTED ANGLES IN RADIANS	•	
IH I	INPUT - SIGNED DEGREES OF HOURS		
IM I	INPUT - UNSIGNED MINUTES OF APC OR TIME		
\$ γ≥	INPUT - UNSIGNED SECONDS OF ARC OR TIME		
K I	INPUT - SWITCH FOR TYPE OF INPUT K=1 INPUT IS IN ARC MEASUREMENT K=2 INPUT IS IN TIME MEASUREMENT		
SURROUTINES USED	NONE		
COMMON BLOCKS	NONE		
INPUT FILES	NONE	Č	
CUTPUT FILES	NONE		
· .		•	
DOUBLE PRECIS	INRAC(RAD.[H.IM.S.K) SION RAD.S IH#3600+IM×60)+S 1#.48481368110953600+5	DINA DINA DINA	33 34 35
IF(K.E0.2) RAI		DINR	35

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

RETURN

END

DNVERT Page 1 of 4 October 1972

DNVERT

DESCRIPTION

DNVERT is a subroutine to perform the double precision inversion of a given input matrix using the Gauss-Jordan Method of Condensation with partial pivoting. The input matrix is destroyed.

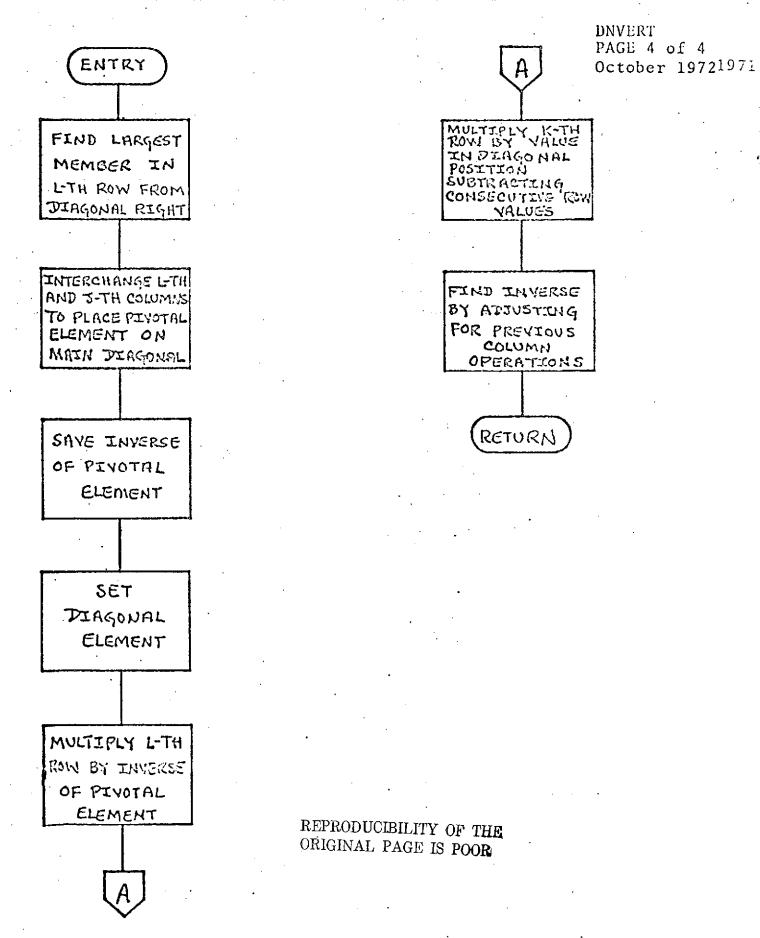
It should be noted that this routine was written specifically for GEODYN. Because of the type of matrices it is required to process, pivotal element testing is not incorporated.

NAME	DNVERT
PURPOSE ()	TO INVERT A MATRIX USING GAUSS-JORDAN METHOD OF CONDENSATION WITH PARTIAL (COLUMN) PLYOTING
CALLING SEQUENC	E CALL DIVERT (N. AXMX.NT. NR)
SYMPOL TYPE	DESCRIPTION
N I	XISTAM PHT A SPRUJOR OF POWS OF PHT MATRIX THE MI CEVILITU YELANDOS PROGRAM PROGRAM MANDOS PROGRAM
AXHX DP	INPUT - MATRIX TO BE INVERTED OUTPUT - INVERSE OF THE INPUT MATRIX TAXMX
NT [YE CENTER OF THE WATERX AXMX AS DEFINED BY WARROWS ONLINE SHE
NR I	INPUT - TEMPORARY STORAGE USED BY PROGRAM TO STORE PARTICULARY SAME PARTICULARY SAME PARTICULARY SAME AND MARING MARAGARES TA SAME FOR THE LAVIOUS MARAGARES AND THE LAVIOUS
SUBROUT INES US	TO NOME
COMMON BLOCKS	NONE
INPUT FILES	NONE
CUTPUT FILES	NONE

	SUPPOUTING DAVERT(N.AXMX.NT.NR)	DNVE	マフ
	DOUBLE PRECISION AXXX (NT.NT).C.P	DNVF	7.8
	DIMENSION NR(N)	DNVE	30
c	SEARCH THE LTH ROW STARTING WITH THE DIAGONAL FLEMENT AND WORKING	DNVF	4.0
c	RIGHT SAVE THE INDEX NUMBER OF THE JTH COLMAN CONTAINING LARGEST	UVAL	4 1
	NUMBER IN ABSOLUTE MAGNITUDE	DNVF	42
	00 285 L=1.N	DNVE	4.3
	P=C +3D0	PNVE	44
	00 272 J=L.N	DNVE	4.5
	IF(.NGT.P.LT.DARS(AXMX(L.J))) GO TO 273	PNVF	46
	P=FABS(3XMX(E,J))	DNVF	47
	NR(L)=J	DNVF	4
	272 COLTINUT	CNVF	4 9
•	INTERCHANGE ITH AND UTH COLUMNS TO PLACE PIVOTAL ELEMENT ON MAIN	ONVE.	60
Ċ	DIAGONAL	PNVF	51
_	J=N-2(L)	PHVE	ج ۽
	DO 273 <=1.N	ENVE	4.7
	C=AXYX(<.J)	NUVE	50
	AXMX(K+J)=AXVX(K+_)	DHAL	ĘF

		ONVE	E6 '
	273 AXMX(K,L)=C	DMVF	5 7
¢	SAVE INVERSE OF PIVCTAL ELEMENT 1./AXMX(L.L)	DNVE	£ 2
	C=1.CDC/AXMX(L.L)	PNVE	F O
C	SET DIAGONAL CLEMENT AXMX(L.L) = 1.	DNV=	4.7
	AXMX(L+L)=1+000	DNVE	6.1
C	MULTIPLY LTH HOW BY INVERSE OF PIVOTAL ELEMENT	DNYF	£ 2
	00 ?9? J=1.N	DNV=	e 3
	282 AXMX(L, 1) = C*AXMX(L, J)	りがくこ	44
C	WILTIPLY KTH DOW BY VALUE IN DIAGONAL POSITION .	DNVF	65
C	SUPTRACTING CONSECUTIVE ROW VALUES	DNVF	66
	00 235 K=1+N	DNVE	67
	IF(L.EO.K) GC TO 285	DNVE	6.5
	C=AXMX(K,L)	DNYF	63
	AXMX(K+L)=C+300	DNVE	70
	DO 284 J=1.N	UKAL	71
•	284 AXMX(K: J) = AXMX(K:J) - C*AXMX(L:J)	CKVE	72
c	INVERSE CAN NOW BE FOUND BY ADJUSTING FOR PREVIOUS COLUMN DOFPATIONS	ひが∧≒	7.7
	285 CONTINUE	DNVF	74
	an 263 I=1.N	•	75
	L=1:+1-1	りゃくら	75
	K=NR(L)	DNVE	77
	DD 289 J=1.N	DNVE	72
	$C=A\times M\times (L+I)$	りいくこ	-
	AXMX(E, J) = AXMX(K, J)	DNVF	76
	289 AYMX(K.J)=C	DNVF	9.3
	RETURN	レバヘモ	91
	EME	DNVE	₽2
	en en en m a		

8.0-166



DODELM

DESCRIPTION

DODELM is a subroutine specifically designed to read orbital element data from the DODS Data Base.

DODELM can read both Cartesian elements and Kepler elements.

DODELM may be requested to read an element set number from observation data near the epoch time. When such data is used, it must be read from the DODS Data Base by subroutine DATBSE.

If the element set number of the desired elements is known, this number may be input to DODELM.

DODELM may determine elements either by element set number or by time. If no element set is found using the former procedure, DODELM will switch to the latter procedure attempting to find an element set at or before the input epoch time if possible, and later than the epoch time only when all else fails.

If no element set can be found, or if errors in the data are encountered, DODELM will print an error message and terminate the GEODYN run by calling ERROR.

NAME.	DODELM
PUPPOSE :	TO READ DEDITAL CLEMENTS FROM DOORS DATA BASE
CALLING SEQUENCE	CALL DODELM(IFLM. ISATID. DAYEPC)
SYMEOL TYPE	DESCRIPTION
IELM I	INPUT & DUTPUT - ELEMENT SET-NUMBER
ISATID I	INPUT - SATELLITE ID
DAYFPC 70	INPUT & DUTOUT - EPOCH TIME IN DAYS FROM JAN C+C
SURPOUTINES JSED	CLEAR DATES DATES DAUL ERROR YMDAY TOIF
COMMON HEACKS	CTIME CELEM CONSTS DODDAT INITAK
INPUT FILES	DODISK - DODS DATA BASE ELEMENT FILE MUMBER
CUTPUT FILES	CUTP - PP[NTFP
REFERENCES	DODS DATA BASE ELEMENT FILE DESCRIPTION •GSEC DODS DOCUMENTATION!
	•GEDDYN SYSTEMS DESCRIPTION! - SECTION 2.11.1 VOLUME 1 - GEORYN DOCUMENTATION

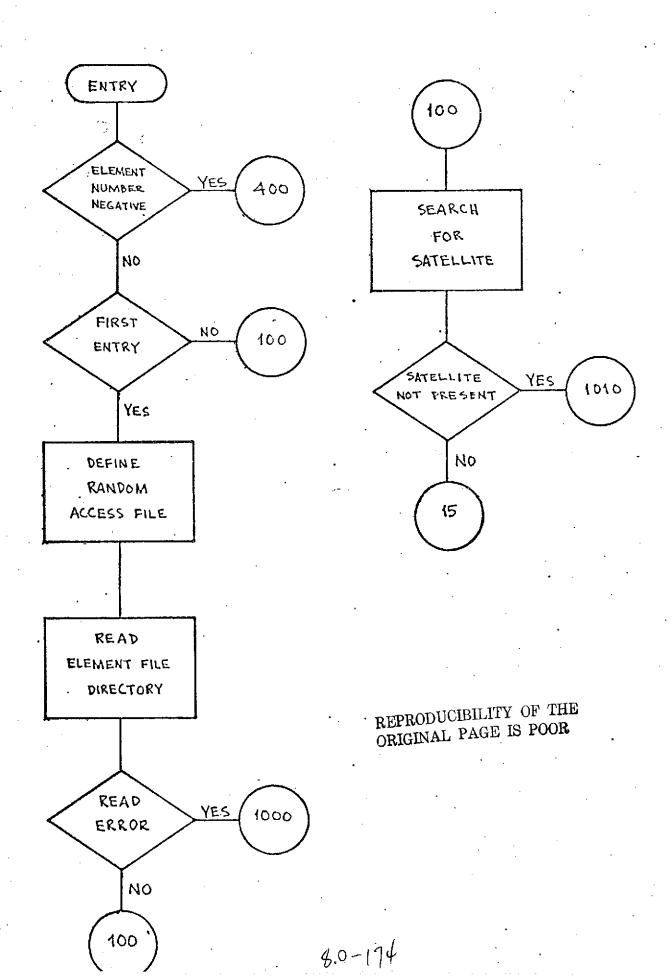
	•		
	DEDEL MARKET D. DAYERCA	BCDB	34
	SUBROUTINE DEDELMETELM. ISATIO. DAYEDE) REAL*5 DAYEDE, DJUL. DUT. CREE. MJEDEH. YMOAY, DEAD. MJD. DJPEE.	בּמַינים	7 =
	REAL*8 TAYERC, DJUL, DUT, CAFE, SULL ECEPSET, SE	DODE	36
	1 ELEMST - DREELA -DUL - DATAEP - XNU - EC - CP SCC - SEC	ህርብቱ	37
	LOGICAL*: NOTIST. DOGELM	ถูกวร	3.4
	INTEGER ISATID.SATNO. RECORD(880). DODISK. DUTP. RECSAT. FLREC(12).	DOOF	3.0
	1 MREC. JED(2)	DODE	4.0
	INTEGERAL LREC. RECEL 17501. RECPAP. 162	DODE	41
	COMMONICT I MEZDATIVED + DAYPER(31)	DODE	4.2
	COMMON/CHLEM/FLEWST(12). DRACLA(12). XNU.EC. RYS	DEDE	43
•	COMMENCONSTS/CUM2 (4) +0PAD+ DUM3(2)	D COE	٤.
	COMMON/2 200 CAT/ 00%4 (21) + 1G2(4)	DODE	45
	DIVENSION MREC(172.5)	prof	4.6
	COMMONATALTERA TENAMO . TENHA . EDSEC . DUM 1 (23)	5000E	47
	EQUIVALANCE (ELREC(1).SABELA(1)).(AED(1).MID).(MART.MDPART).	DODE:	42
	(LREC.RECGRO(1).PEC2(1))		40
	DATA DURER DUL DUT / 24 35099 . 500 . 1 . CD7 . 8 . 649 2/	2000	
	DATA NOTIST/.FALSE./	2000	50
	DATA CUTP. 03015K.J/0.41/	いいっと	51
	1F(10(P+_T+U))-GO TO 440.	じじつも	5.2
		しいしき	6 7
	NOTICE TOUC	€00F	÷۷
	CTEINE RANDOM ACCESS FILE ORIGINAL PAGE IS POOR	ይ ተውዩ	۴٠,

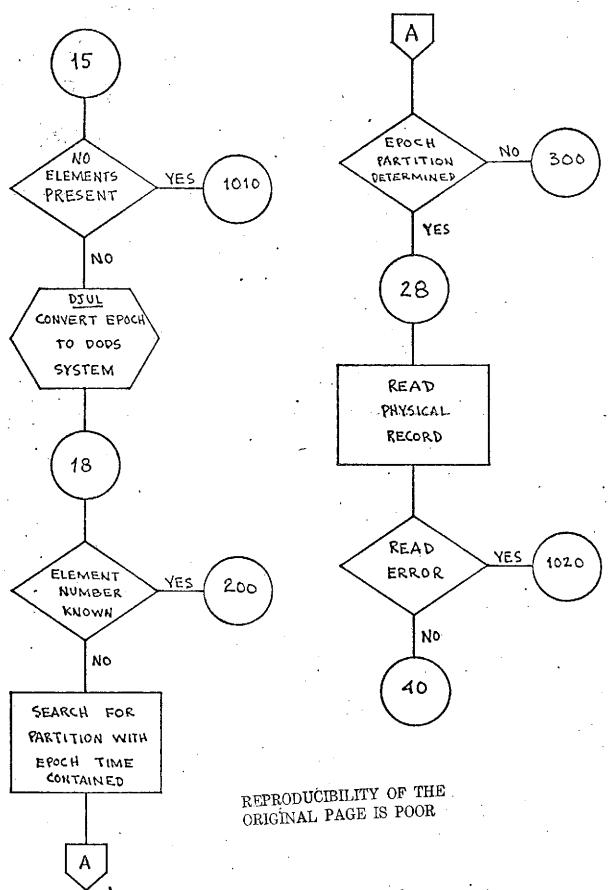
-		DODE	56.	
•	DEFINE FILE + (442.352).L.ICNT)	ppos	57	
	ICNT=I	DODE	58	
C	READ DERECTORY RECURD	DEDE.	50	
	READ(DONISK* ICHT, ERR= 1000) PECOPO	DULL	60	
	RECPAR=2003(2)	DODE	61	
C	SEARCH FOR SATEULITE	DODE	62	
	100 00 10 T=2+LRFC	DUDE	63	
	IF(RFCD47(1).GE.C) GO TO 17	DODE	64	
	ISAT=-PTCOPD(I)	DODE	65	
	IF(ISAT.DO.ISATIO) GO TO 15	DODE	66	
•	IC CONTINUE	DODE	67	
	GD TO 1010	CODE	ep.	
	15 NOPS=RECORD(T+1)-1	DUUE	60	
	[F(N)95.LE.0) GO TO 1010	DCDF	7¢	
	RECSAT=(NOSS-1)/5+1	DODE	71	
	NO (9= NO 35 - NO 35 / 5 * 5	DODE	72	
	IND OB = 5	DCDF	73	
	NOPART=(PCCSAT+1)/RECPAR+1	ביווח	74	
_	IWCRD=I++	DONE	75	
C	CONVERT EPPCH TO DODS SYSTEM	DUDE	76	
	MUTPCH=DUIL(DAYFPC)-DUREF	DODE	77	
	NWCRD=I VIRO +NOPART +1	DODE	78	
	NORECEPECSAT-RECSAT/RECPARERECPAR	DCDE	70	
	IF(NDREC.=0.0) NDREC=RECPAP	₽DDE	BC	
_	IF(ICLM.GT.0) GD TO 207 SEARCH FOR PARTITION CONTAINING FROCH TIME	פחת	Pi	
C		3000	P 2	
	18 DO 26 J=100RC,NWORD	DODE	83	
	AND =8EC3(NAO8D3) NAO8D3=34N-1	DODE	84	
	TE(NUEDCH.ET.(NUC+1.DG)) GD TD 25	DODE	85	
	26 CONTINUE	Dobe	RF	
	60 70 200	DUDE	87	
_	EPOCH TIME PARTITION DETERMINED	DCDF	P B	
Ļ	25 IDANTEMAN (J-100 OF TO TOTAL OF TOTA	りつつき	A O	
	JWGRDZ=:*(IWCRD+IPART-1)	DODE	90	
	28 C≠90N 8S	ከ ቦበት	01	
	ICCONT=3FC3(JW ORC2)	DODE	9.5	
	NREC#ICOUNT+RECPAR-1	ัยดาค	6.0	
	LAPFL=1	Dout	OV	
	IF(IPAFT.NE.NPART) GO TO 30	0.0 00 E	កឡ	
	NREC=ICOUNTENDREC-1	りのうど	o ƙ	
	IF(NDREC.EG.1) INDOB=NDOB	DUDE	ġ7	
c	READ PHYSICAL RECORD	ししい日		
•	30 ICNT=ICMAT	0.005	00	
	READ(DD)ISK*ICNT+EPR=1020) MREC	いっしょ		
	40 NOP=NOB+1	DUJE	101	
	[F(NOR.ST.INCOR) GD TO 50	DODE	102	
	JED(1)=**EC(2.NOP)	DUDE		
	188 (33 - 158 C (3, NOP)	DODE		
	MUD = MUDE 1. CD-2 REPRODUCIBILITY OF THE	ひつひこ		
(CHECK FOR ELEMENT SET AT EPOCH ORIGINAL PAGE IS POOR	ひしひと	-	
•	1m(vugnc4.cq.wun) GO TR 50		• (7	
	IN(MURROW, RÉLMUR) GO IN 42			
	KOG ≠NCD +1		150	
	[F(NON.50.0) GO TO 90		. 10	
	CO TO 6:	DUCE	. 11	

50 ICOUNT=ICOUNT+1	DODE 112
TECTOUNE GT AREC) ON TO 500	D00E 113
LAPEL=?	DDDE 114
1CHT=1CHANT	DODE 115 DODE 116
C READ NEW PHYSICAL FECORD	1 POR 117
READ(OCOLSK! ICNT (EPR= 1020) MREC	D005 118
N(IR=C	pope 119
ECCH=HCGP1 (D39M.03.THUDD1.GMA.07.AA9M.02.THAGH.07.	PCDE 120
SO TO AT	121 2000
C ELEMENTS HAVE BEEN FOUND	DODE 122
66 00 61 T=1+12	DCDE 23
61 ELREC(1)=MREC(1+4,NDR) 1ELM=MPEC(1,NDB)	DCDE 124
JED(1)=M95C(2:NOB)	prof 125
JED(2)=MPEC(3,NDB)	PPDF 126
MJC=XJC+1.00-2	DONE 127
ITYPE=MREC(4.NOR)	D0DE 128
GO 19 (55.75), ITYPE	DODE 129
GO TO 1232	pnn= 130
C CAPTESTAN ELEMENTS LOADED INTO COMMON	DODE 131
65 DO 71 I=1+3	DODE 132
ELEMST() = OPPELA() * DUL	DONE 133
7C ELEYST(1+3)=0REFLA(1+3)#DUL/DJT	DDDF 134
GO TO 85	D006 135
C REPFERIAN STEMENTS FUNDED INTO COMMON	900E 138
75 ELENST(1)=09PELA(1)*QUL	900E 137
**************************************	DODE 139
nn 90 I=5.6	DODE 140
8C ELFAST(1)=DRPELA(1)/DRAD	DODE 140 DODE 141
. 85 CALL CLEAR (MREC. ABC. 1)	DODE 141
TE(MUEBCH.EG.HUD) PHIURN .	DODE 143
© RESET 130CH	DOCE 144
DAYEDC=1JD+TMDAT(57691546464E4	PC05 145
CAT AEP=DAY EPC	DODE 146
CALL DATES (DAYERC, IERYMD, [HM.SEC)	DO05 147.
180HV=14M	DONE 148
EPSCC=SEC	D00E 149
RETURN	D00E 150
92 ICCUNT=ICOUNT-1	DCDE 151
NOF = 1	DDDE 152
IPART=1PART=1	D00E 153
IF(IPAFT.LT.1) GO TO 60	DONE 164
C PACK UP ONE PARTITION	DODE 155
JWCRD2=?=(IWCRC+IPART-!)	+ PDDE 156
ICCUNTERFC2(UMORO2)+RECPAR+1	יני פרוסס די פרי
GO TO 333 REPRODUCIBILITY OF TH	DODE 159
C SEARCH OF CLERCAL MET NO VERY	, none 159
SOU DO SEC 1= IMOSO NACIO ORIGINALI TITO	
ヿ ゙゙゙゙゙゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚゚	pnn+ .161
ICCUNT = 0 = C 3 (U#ORC2) = 1	DODE 162
MRECHICAUNT FOICHAR	, ከበበብ ነፋን የመርመ ነፋም
TE (1.EC. MADAD) NAECE I CHANTANDEC	DDD 164
21c /1chuit=1chuit+1	DATE 165
TERROUNDED NO TO 250	ውስባት ነጻፉ የነባር ነጻፉ
LAMPLE T	CHIE A

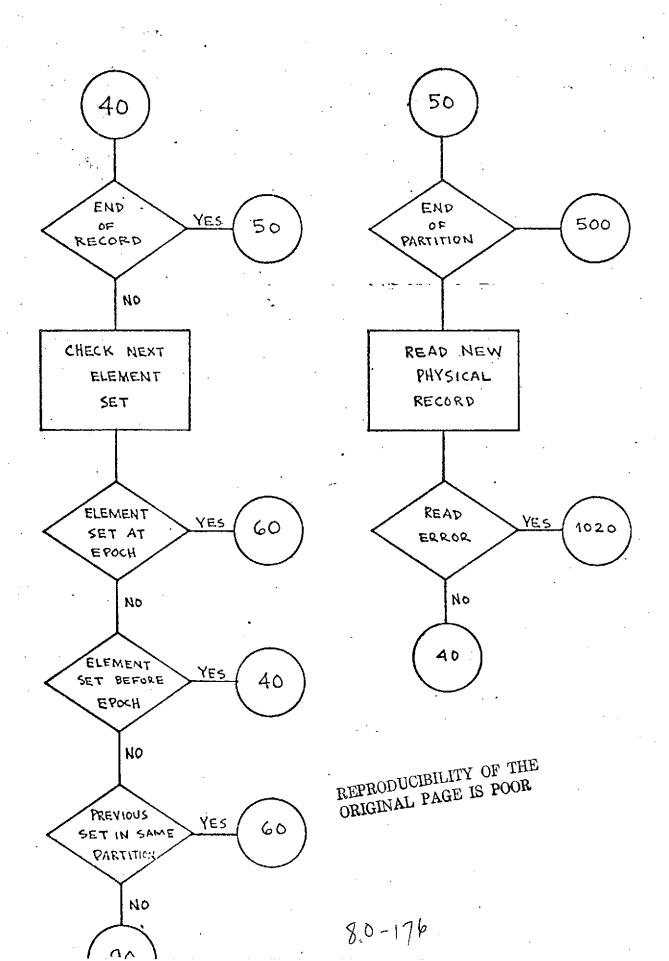
	2005 168
ICNT=ECDUNT	DODE 168
C PEAD NEW PHYSICAL PECDED	DODE 169
READ(DODISK*ICHT.ERR=1320) MPSC	DOME 170 DOME 171
1F (ICCUMT - EQ -NREC - AND -J -EQ - NWORD) [NOOR=NOOR	DODE 172
00 240 468#1.1N008	DOOF 173
1F(MREC(1:NOP) .EO. IELM) GO TO 60	DODE 174
240 CONTINUT	prof 175
25C CONTINUE	D005 176
C NO ELEMENTS AVIALABLE WITH THIS NUMBER	DODE 177
WRITE (DUTO 2250) IELM	DODE 178
IETW=6	505E 170
GO TO 13	DDD5 180
300 JWC802=3*NVDRO	pnos 181
ICCUNT= REC 2(UMCRC2) + N DRFC-1	DODE 182
C TAKE LATEST ELEMENT SET	pnos 183
LASTLEG	DODE 184
MOR=NOCT	DANE 195
GO TO 313	D005 185
305 NOF=5	DODE 187
31C ICNT=IC TUNT	DOM: 198
C READ LAST PHYSICAL RECORD	DUSE 188
C FIND ELEMENT SET NUMBER FROM DATA	DCD- 190
RE40(DC)15K*1CNT+ERR=1020) MREC	DUDE 191
60 TB 67	DDDF 192
4CC MUE OCH=DAY EPC+1.IDZ	DOUE 163
DCT ELM F. ALISE .	DDDE 104
[N=]3	nnna 195
CVEF DVLUZE (INFDVARDC A REDUNT É EVIL DO JULIA)	DODE 196
CALL DATASE (IN. DAY FOC. MUEPCH. I SATID. DOOELM)	DOOF 197
1EF x=103(1)	D005 198
GO TO 5	ľ Uľ⊏ .ċċ
500 JW6R02=JW0R02+2	DODE 100
"IF (IPANT. FO. NPART) GO TO 1015	DOME SOI
C TRY NEXT PARTITION	0005 308
104RT =[P4RT+1	000E 5031
GO JTO 23	D00F F04
C PRINT ERROR MESSAGES	D005 705
1000 WRITE(DITP.2000) J .	DODE TOE
on to 1135	DODE 107
1012 WRITE (DITP. 2012) ISAT ID REPRODUCIBILITY OF THE	803 E709
1012 WRITE (DITE 2010) ISAT ID GO TO 1035 1021 WRITE (DITE 2020) ISAT ID ICHUNT LARFL ORIGINAL PAGE IS POOR/ GO TO 1035	buck sid
102: WRITE(B) 042320 1584 Printers 4 12 12 12 12 12 12 12 12 12 12 12 12 12	DODE SIC
1030 WRITE (0)TP.2030) ISAT ID. [CHUNT, ITYPE, LA 35L	D00E 111
1035 WRITE(0)170.2040) RECORD. WREC	D00E 213
1935 ANTI-FORM LATE	D UDE 213
C TAKE ERROR EXIT CALL ERROR (7.DAYERC)	DODE 014
	որող ինե
STOP SCOO EDEMATCHEL-SOX-CONABLE TO READ DODS DATA BASE PLEMENT DIRECTORY SCOOL EDEMATCHEL-SOX-CONABLE TO READ DODS DATA BASE PLEMENT DIRECTORY	IN DODE ATY
	• •
THE POST OF THE PARTY OF THE POST OF THE P	P10 3000
	בנים ומחל
	pont tot
- Action - haptically (TOTALISE CONTACTOR CONT	
こうしょう しょうしょ スプラン アンドラ アンドラ はいしょう はい	
2 31X FORMAT CLHO . SCX . FDDDS - ELEMENT - RECORD - FRANCIS ENGINEERED - FDR . I.	D000 153

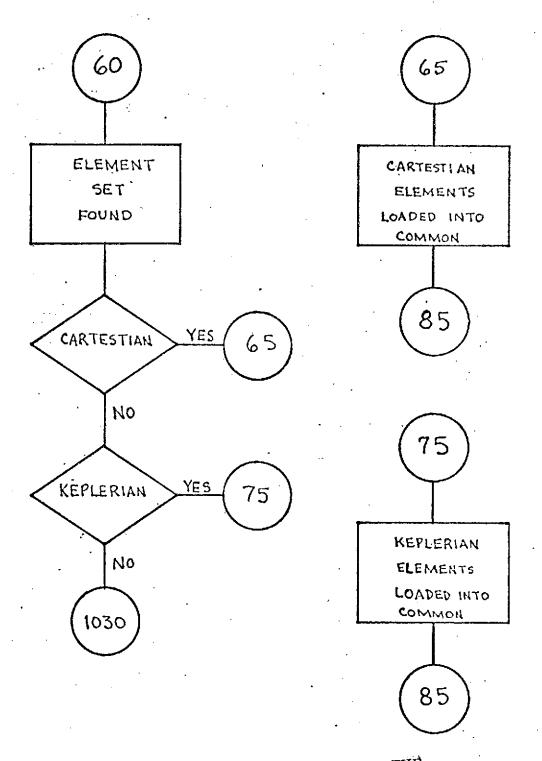
	SATELLITE . 19/21X . FLEMENT TYPE INCOPPECTLY SPECIFIED IN .	りつつモ	724
1	*REC 380 * 19/21X * TYPE SPECIFIED IS * 19/21X * NONAME EXECUTION * *	DUDE	225
ئـ 2	* TERMINATED* /21X .*LAHEL =* +12)	りのりも	556
2046 50	OCHATICHIZICX.79.1X.79.7X.79.1X.79.4X.79.4X.79.2X.79.1X.73.2X.79.1X.73.1	DODE	
2250 FI	DENATCHALPOX FUNABLE TO FIND ELEMENT SETTATEZEX, TN DOOS DATA"	DUNE	~ 2 °
	 BASE FLEMENT FILE*/21X, PROGRAM SEARCHING FOR ELEYENT SET **. 	f.i.kht.	٠٠ ح
2	*COPRESPONDING TO FPOCH!//)	DUDE	
E	ND	BOUE	2,31



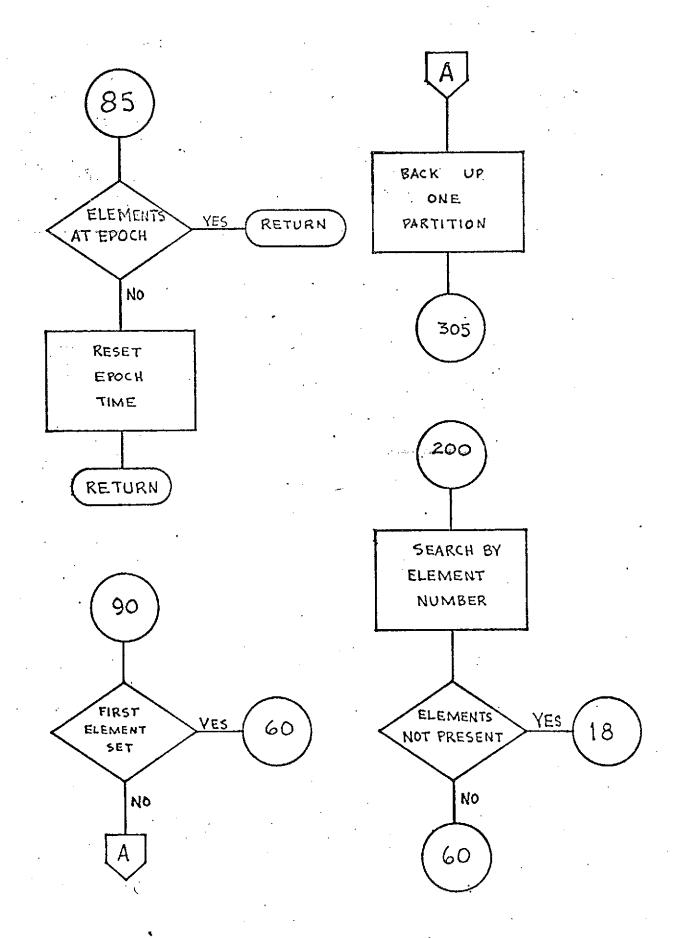


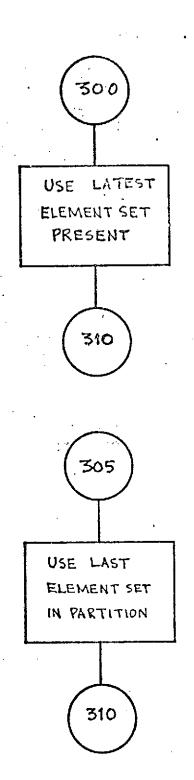
8.0-175

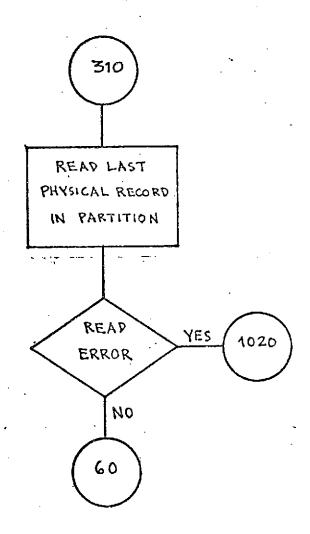


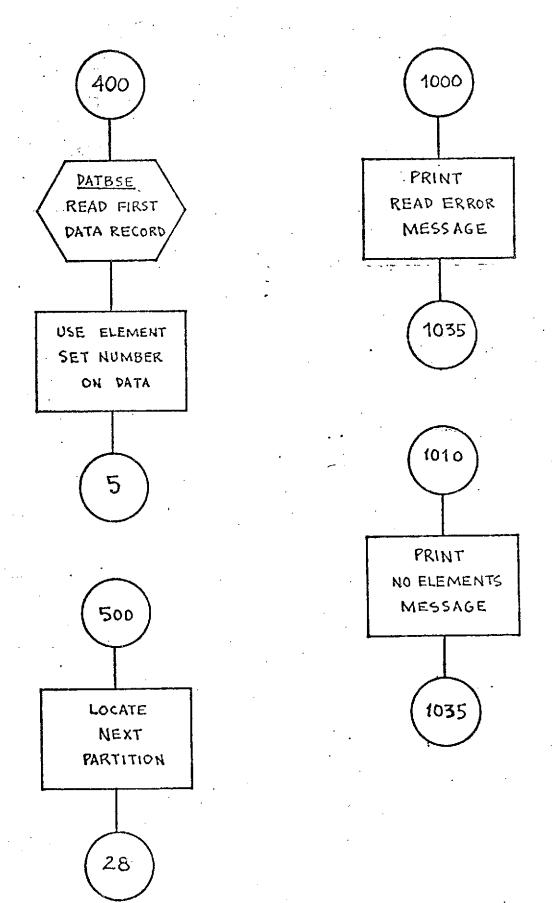


REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

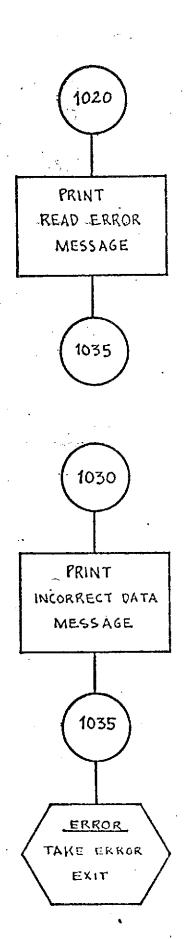








8.0 -180



NAME CODSRD TO READ OBSERVATION DATA IN DODS FORMAT AND PURPOSE FARTIALLY PREPROCESS THE OBSERVATIONS (ALL DODSED(NSTARD) CALLING SEQUENCE STRECE TYPE CESCRIPTION INPUT - NUMBER OF STATIONS THAT WERE READ FROM NSTARO I CARDS CARCTN CATBSE EQUATR CLEAR SUBROUTINES USED ANDS BIAS NUMBER 4 RANDWR YMDAY TOIF NUMBR2 CTIME CPARAM CONSTS CEMMON ELUCKS **APARAM** CGECS PREBLK SIGHLK TAUGOD CEPHEM INTOLK **ETANUM** TRESEK INTP - INPUT CARES INPUT. FILES NEWTAP - DUTPUT DATA TAPE NUMBER CUTPUT FILES FRINTER

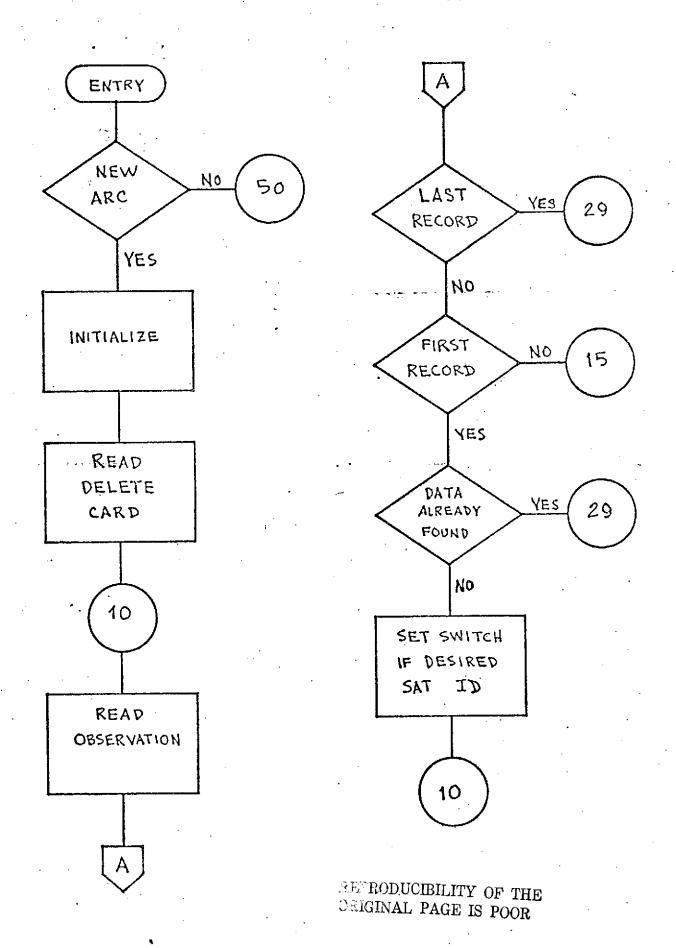
SUERUUTINE DOCERC(NSTARD)	DODS	50
IMPLICIT REAL+E (A-H+D-Z)	DODS	30
LOGICAL*1 PREFFO. VHECHN. NEWTP. LSTANK. BL. HOTIST. ONEDB. OKSAT. NAMET	0005	31
LOGICAL NURATE	D005	32
COUPLE PRECISION NAME, JAME	0005	33
REAL REINDX, SIGCHG, SIGSTD, SZR, TCOR, SIGI, SIGZ, DHREC, TOIF, SORT	2005	34
INTEGER#2 MITTE, MMEAS, PRETTP, CHANEL, INDPRE, IPREPR, IMTTPE, ISTNO.	2005	3.5
CHNMSK.OBITS.IO.IT.TTAG.PRIT1.PRIT2.ITYPE.ORIT.IG1.IG2.	DODS	31
FEEDOK + CULL - 1811 - 1STARD - ESTAND - 1STAND - STANDS - 1SAT	2005	37
INTEGER AND 2, AMBIG, SATNO, RECNO, DELETE	DCDS	3 ≣
DIMENSIUM TIME (14), STNAR (14), 005(14), 088EC (25), X(3), 081TS (14),	2005	30
<pre>[TYPE(10).FEEDdK(4).CELETE(7).LSTANM(3).CNEOd(7).IBIT(16)</pre>	2000	44.0
COMMUNIAPARAMINAR, INPARI, NETAS, NSISTA(7)	อดอร	41
COMMUNICGEUS/ISATIC,ISAT2,IFREPR(4,50),RFINOX(2,50),INDPRE(2,50),	ດດວຣ	3.2
APRE.NSIG.NCULL.SIGCHG(50), IMTYPE(50), ISTNO(50), CULL(2,100)	ວດວຣ	1.3
COMMON/CONSTS/CPI+CTWOPI+DRAD+SSR+I52R	פרסס	ዕል
COMMON/CPARAMINSTAINMAST (13)	DODS	≈.5
COMMUNICTIME/CATAEP.OAYREF.OSTART.DAYSTP.INTOAY(15)	2025	45
CUMMON/DULOAT/TIME1.STNAM1.CED1.DG(2).DBSCOR.SATNO.IOBNO1.	2000	47
• INT(6).TCOR.IG2(2).IT.IG1.TTAG.PELT1.PBIT2.IG	0005	, a
CCMMUNICEPHEMIUNAME(381), ISTARD(381), ESTANO(381), ISTANO(386)	0005	ηç
CCMWGN/IRTBLK/IRTEGI(53).NORATE.INTEG2(73)	DODS	ΞQ
COMMUNIPAEGLKIEAY. DDS1.0852.51G(2). SRENDX.1STA.MTYPE.NMEAS.	OUDS	. 51
* ISAT.PRETYP.CHANEL.VHFCHN.PREPRO.RECNU	DUDS	52
COMMUNIST GBEKI STGSTG (60) +1N +1D TAPE (3)	2005	5.3
CCMMUNZSTANUMZKAME (280), STANCS (280), NOSTUR	0005	54
CCMMONATPEOLEXINTP(7), IND. 15CRA(6)	DODS	55
TORUTY OF THE		
REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR		-
ORIGINAL PAGE		
Olivo-		

```
0008
     EQUIVALENCE (SIG1.SIG(1)).(SIG2.SIG(2)).(FEEDBK(1).DG(2)).
                                                                              0025
          (LSTANK(1),STHAM1),(OBREC(1),TIME1)
                                                                              200C
      DATA CHNNSK/Z7/.181T/Z1.Z2.Z4.Z8.Z10.Z20.Z40.Z80.Z100.Z200.Z400.
                                                                              DODS
                                                                                     5°
          ZU00+Z1000+Z2000+Z4000+Z6000/+DUL/1+9D+7/+DUT/3+54D+2/+ ...
                                                                                     00
                                                                              0005
         FTPEST/0/.SINEST/6H /.CAYEST/0.000/.IM/U/.NtwTAP/3/.
                                                                              DODS
                                                                                     \circ 1
          ITYPE/2, 5, 12, 7, 10, 1, 9, 0, 3, 7, 0, 6, 13/, OL/IH /, ONEDA/, FALSE.,
                                                                              DODS
                                                                                     22
          3# .TRUE.,3# .FALSE./, VLIGHT/2.997925D3/
                                                                              0005
                                                                                     53
      NUMEL REO
                                                                              0005
                                                                                     0.0
      NOTIST=*FALSE*
                                                                                     55
                                                                              DODS
      ISAT=1
                                                                              0005
                                                                                     56
C INITIALIZE
                                                                                     57
                                                                              0005
      NCRATE=.TRUE.
                                                                              0005
                                                                                     68
      IF (IN . LE . 0) IN = 21
                                                                                     69
                                                                              DODS
      CALL CLEAR (CELETE, 7,1)
                                                                                     70
                                                                              DODS
C READ DELETE CARD
                                                                                     71
                                                                              DUDS
      IF (MOC(INO. 2) . EO. 1) READ(5.2000) DELETE
                                                                                     72
                                                                              ひひりち
      NEW TP = IND . E U. 2 . OR . IND . EO . 3
                                                                              DUDS
                                                                                     73
      INCED
                                                                              2000
                                                                                     70
      CKSAT=+FALSE+
                                                                              DODS
                                                                                     75
      CO 3 I=1.14
                                                                                     70
                                                                              CODS
      COU.O=[1]SMIT
                                                                              DODS
                                                                                     77
    5 STRAR(I)=0.000
                                                                                     78
                                                                              CODS
      REFTIM=YMCAY(570916.0.0.000)
                                                                                     7 C
                                                                               2005
      CUEASE=YMOAY(SCOLOC.0.0.000)
                                                                               DODS
                                                                                     80
C READ ORSCHVATION
                                                                                     31
                                                                               2025
   19 CALL DATESCLIN DATAEP DAYSTF , I SATID , NOTIST
                                                                               0005
                                                                                     32
      IF(TIME1.GT.0.CD0) GO TO 15
                                                                               DODS
                                                                                     33
       15(11ME1.LT.-1.5DO) GO TO 200
                                                                              DODS
                                                                                     36
      -1-F-( LK:SAT ) GO TE- 200
                                                                               0005
                                                                                     5.5
C CHECK SATELLITE II
                                                                               มนบร
                                                                                     150
      CKSFT-IBATIDA ECASA INDADRA ISATIDA ECAC
                                                                               2 COO
                                                                                     87
       IF (UKSAT) 13AT 10=SATNO
       VHFCHN=1SAT IU.EQ. 67511.08.15AT ID.E0.6750101
                                                                               0005
                                                                                     37
       IF (NEWTP AND CKSAT) WRITE (NEWTAP) DEREC
                                                                               2000
                                                                                     34
                                                                               DODS
                                                                                     90
       GC TG 10
   15 IF(.NGT.OKSAT) GO TO 10
                                                                               2025
                                                                                     91
                                                                               2025
                                                                                     92
      MTYPE=ITYPE(IT)
                                                                               BODS
                                                                                     23
       IF(MIYPE.EQ.O) GD TO 10
                                                                                     34
       IF (NewTP) WHITE (NEWTAP) DAREC
C STORE DESERVATION UNTIL PAIRS ARE MATCHED
       TIME:=TIME::+TCCR
       DBC1=C901+399CC9
                                                                                     33
       TIME(MTYPE)=TIME1
                                                                               DOD'S.
       STNAM (MTYPE) = STNAM I
                                                                               DDDS 100
       OBS (ATYPE) = CaCI
                                                                               0005 101
C CHECK PREPROCESSING INDICATORS
                                                                               000S 102
       AMBIG=(FLELOK(4)+(FEEDBK(4)/256)#2561/16
                                                                               2025 103
       CHANEL-ANDZ (CHNMSK .FEEDBK(A))
                                                                               DODS 106
       I=PcIT1
                                                                               DODS 100
       J=P£IT2
                                                                               DODS 106
       CEINS(MIYPE)=LCR(1.J)
                                                                               0005 107
       MIYEC=MIYPC-MIYPE/857
       IF (CNEOB (MTYPE)) GC TO 20
                                                                               D005 108
       IF(TIME(MTYPE).NE.TIME(MTYPE+7).OR.STNAM(MTYPE).NE.STNAM(MTYPE+7))000S 109
                                                                               200S 110
      . GO TO 10
                                                                               DUDS 111
    20 DAY=TIME(MTYPE)/1.0D+2+REFTIM
```

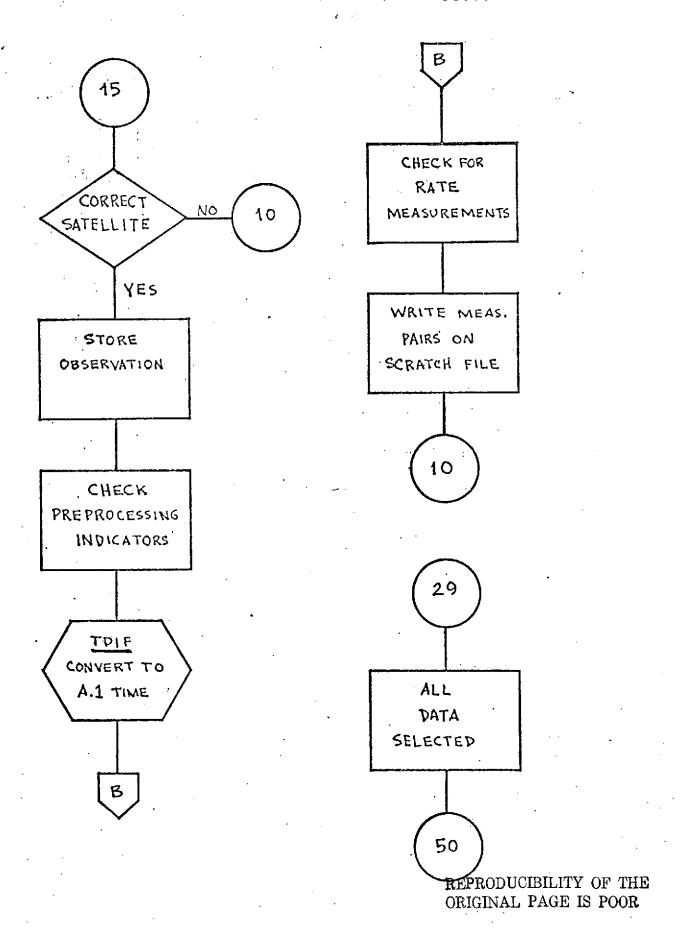
		-	٠.
C CONVER	IT TO A. 1 TIME	DUDS	112
		DODS	113
	(CAY-LI-DATALP) CO TO 10	DUDS	11/
	(EAY. GI. DAYSIP) CO TO 200	อบกร	115
	=FTYPL	0005	115
	FOR MATE MEASUREMENTS PRESENT	DUDS	117
	(NUMBRA (NT. CELETE, 7) . GT. 0) GO TO 10	DODS	118
	<pre><pre></pre></pre>	D005	119
	TANM(E) = OL	DODS	120
	1 500 1=1.NSTARD	0058	121
	(STAAMI. EC. JAAME(I)) GO TO 630	2000	122
=	PINTINUE	DODS	123
) 610 1=1, KUSTOR	DUDS	125
	(STNAMI.EQ.NAME(1)) GO TO 620	DODS	125
•	DKT1 NUC.	DODS	126
	AAP = INAM + I	DODS	127
_	STANK(7)=0L	DODS	128
	(INAM. EQ. 1) CO TC 590	DODS	129
en.	INT 1000, STNAM1 -	DODS	13C
	י די	DODS	131
	5N=STANOS(I)	DODS	132
GC	TU 6+0	DODS	133
€30 18	SN=ISTARO(I)	DODS	130
	STA=NUMBR2(ISN,ISTAND,NSTA)	DODS	1.35
IF	(ISTA.GT.0) (G TO 550	0005	13c
į s	STA=NSTA+1	DODS	137
, NS	ST/=ISIA	0003	139
1 5	STANC(NSTA)=ISN .	0005	139
€50 IF	(NSIG-LE-0) (C TC 24	ວຕວຣ	1:50
1 F	F(NTYPL:NE:3) GO TO 25	ひいひら	191
7.1	∖1 =U	ยยยย	162
	23 1=1.NS16	0005	
	F(ISN.RE.ISTNOUT).AND.ISTNOUTD.NE.C) GJ TO 23	DODS	-
	F(3.EU.IMTYPE(1).CR.IMTYPE(1).E0.0) NH1=I	DOOS	-
	CNTINUE	DODS	
	F(NN1.GT.O.ANC.SICCHG(NN1).NE.O.) NORATE=+FALSE+	DODS	
•	U 1J 25	DODS	
	JRATE=+FALSE+	0005	
	INTINUE CONTROL OF THE CONTROL OF TH	0008	
	PIT=CBITS(MTYFE)	2003	
	151=Co5(MTYPE)	0005	
	BS2=CHS(MTYPE47) I Recundant (ESERVATIONS	2000 2000	
	# (MTYPE.E C.MTFLST.AND.STNAM1.EO.STNLST.AND.DAY.EQ.DAYLST)	0003	
=	60 TU 10	0000	
	TELST=MTYPE	Doos	
-	TNLST=STNAMI	DODS	
	AYLST=UAY	DODS	
· ·	VEA5=2	0005	
	PRE=0	0008	
=	RETYP=0	DCDS	_
	F(NPRE=10+0) (D TC 90	0005	
	ND=0	0005	
	MINE PREPROCESSING TO BE DONE	0005	
	3 70 1=1.NFRE	DODS	
70 16	F((INDPRE(1,1).EQ.O.OR.INDPRE(1,1).EQ.ISN).AND.	DCDS	
•			

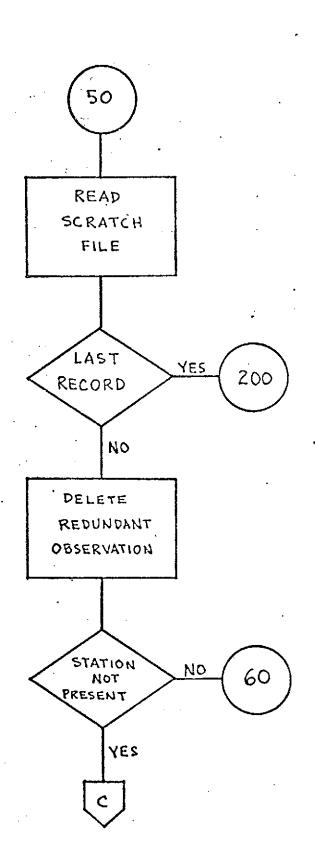
```
D005 163
       (INUPRE (2.1) . EQ. 0. OR. INDPRE (2.1) . TO . MTYPE)) INDEI
    + IF ( INL. 50.0) GC TO SO
                                                                        - DODS: 179
     SRFAUX=RFINCX(1,INC)
                                                                         DODS 171.
     IF(IPREPR(3.1NL).GT.O) DAY=EAY+FFINEX(2.1ND)/86400.
                                                                         DUNS 177
      IPRE#IPREPR(1:140)
                                                                         0003 173
     0003 174
     PRETYPHIPROPR(2.1NU)
                                                                         DOOS 175
C PROCESS MEASUREMENTS ACCORDING TO TYPE
                                                                         D005 176
90 GO TO (110,120,130,130,150,200,320) AMTYPE
                                                                         0003 177
C ***CPICAL
                                                                         D00S 173
  110 CUSD=UCUS(UBS2)
                                                                         D005 179
     $IG2=$16$TD(0)*$2R
                                                                         0003 130
      $161#$16$76(1)#$29/605D
                                                                         pops 181
      IF ( INC. EQ. 0) GE TO 400
                                                                         D0DS 182
      IF(IPREPR(4,INE).FC.0) GO TO 115
                                                                        DODS 183
      IF(IPHEHR(4.INC).E0.1.AND.AND2(0817.IBIT(5)).NE.0) GO TO 115
                                                                         D005 184
                                                                         0003 135
     x(1)=0CUS(UB51)*CDSD
                                                                         000S 186
     X(2)=051N(0051)*CC5D
                                                                         DODS 137
     X(3)=CSIN(Ue52)
                                                                         D005 188
      CALL EQUATRIX.CUBASE...FALSE...X.DAY..TRUE.)
                                                                         0008 139
     0851=EARCTN(X(2),X(1))
                                                                         DUDS 170
     OSS2=CARSIN(X(3))
                                                                         D005 191
  115 IF (IMREPR(1, INC) . EC. 0) IND=0
                                                                         DODS 192
      60 10 400
                                                                         DODS 193
C ...RANCE KATE -
                                                                         DCDS 194
 130 0881=C581/CUT
                                                                         0005 195
     SIG1=0.01 #51G5TD(2)
                                                                         U005 105
C ... RANGE & RANGE RATE
                                                                         D005 197
 120 0851=LoS1+DUL
                                                                         มบับธ 1ะฮ
      NM=A5=1
                                                                         DODS 199
      IF(MTYPE.EQ.3) GO TO 400
                                                                         D005 200
      S1G1=51G5T5(2)
                                                                         DUDS 201
      IF (INC. EQ. U) GC TC 400
                                                                         D005 202
      IF(IPRE.EO.1.2ND.AND2(DBIT.IBIT(6)).NE.0) IPRE=(AMBIG+2)/3
                                                                         DODS 203
      IF(IPRE.NE.O) EAY=DAY-DBS1/(VLIGHT*E.5404)
                                                                         DODS 204
      GO TO 400
C ... MINITRACK
                                                                         DCDS 205
                                                                         DODS 206
  150 SIG1=G351 ## 2
                                                                         DODS 207
      IF (EIG1.LT.1.) SIG1=50PT(1.-SIG1)
      $1G1=$1G$TL($)*1.E+3/$1G1
                                                                         DODS 203
                                                                         DODS 200
      $162=C852**2
      IF(SIG2.LT.1.) SIG2=SQRT(1.-SIG2)
                                                                         DODS 210
      $162=$165TO(12)*1.E-3/$162
                                                                         DODS 211
                                                                         D00S 212
      GO TO 400
                                                                         DODS 213
C RETURN STATION ZERG
                                                                         0005 214
  200 15TA=0
                                                                         D005 215
      MTYPE=0
                                                                         DUDS 216
      IN = C
                                                                         D005 217
      IF (NEWTP) END FILE NEWTAP
                                                                         D005 216
      RECNG≅RECNU+1
                                                                         DODS 219
      PRINT 3000 NUMBER IN
                                                                         0008 220
      CALL FANDAR
      CAYSTF=DAY
                                                                         0005 221
                                                                         522 2000
      RETURN
                                                                         DUDS 223
  300 SIG1=SIGSTD(6)+SZR
```

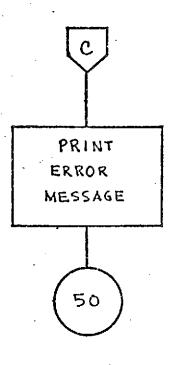
			D002 854
c	X-Y ANGLES		puns 225
•	S1G2=S1GSTD(13)*S2R		D00S 225
	GD TU 400	-	DODS 227
	320 S1G1=SIGSTD(7)*52R		0008 22°
c	AZINUTH & ELEVATION		DODS 220
	\$16∠=\$16\$TD(14)*\$2R		DUDS 230
	400 (F(NS1G.EG. 0) GC TO 410		pass 231
c	MAKE STEMA CHANGES		DODS 232
_	NN1=0		DODS 233
	NN 2 = 0		D0DS 234
	DO 405 I=1.NSIG		DODS 235
	IF(ISN.NE. ISTNC(I).AND. ISTNC(I).NE.C) GD TÚ 405		0 0008 236
			000S 237
	IF (NIYPE+7.EU + INTYPE (I) + DR. INTYPE (I) + EQ. 0) NN2=1		DO05 233
		•	0005 239
	IF(NN1.GT.0) SIG(1)=SIGCHG(NN1)*SIG1/SIGSTD(MTYPE+7)		DUDS 240
	IF(NN2.GT.0) SIG(2)=SIGCHG(NN2)*51G2/31G3/5(MTT 2.1.)		DODS 241
	410 IF(KCULL.E0.0) GO TO 420		D005 242
c	CULL MEASUREMENTS .		0008 243
	DC 415 I=1.NCULL .		2005 244
	nn A15 J=1.NMEAS		D005 245
	IF(IM+J-CULL(1:1)) 015:413:411		0005 245
	411 IF(IM+J.GT.CULL(2.1)) GO TO 415		pnos 247
	413 SIC(J)=J.000		0005 213
	415 CUNTINUE		D005 245
	420 IN=1M4NMEAS		D005 250
	PREPRO=NPRE+GT+0+AND+IND+ST+0		0005 251
(SET PREPROJESSING SWITCH		0005 252
	. PRETYP=PRETYP+10#TFRE		0005 253
	RECNURACIONUTI		DODS 254
	1F(NETA5.GT.O) CALL BIAS		ტიბნ 235
	NUMEER=NUMBER + NMEAS		DODS 256
	CALL- RANJER		DODS 237
	\$16(2)=0.000	•	DCDS 258
	TIME(MIYPE)=0.000		DUDS 535
	T1M2(NTYP2+7)=C.ODO		9 005 250
	GO TO 10		0005 251
	1000 FORMAT (' STATION '.AS." NOT FOUND!)		DDDS 252
		٠,	0005 253
	3000 FURNAT(1H0//31), IC. 1 UBSERVATIONS SELECTED FROM MASTER DOUS		D00S 256
	. *LATA TAPE NUMBER*,13)		DODS 265
	END		4
	•		

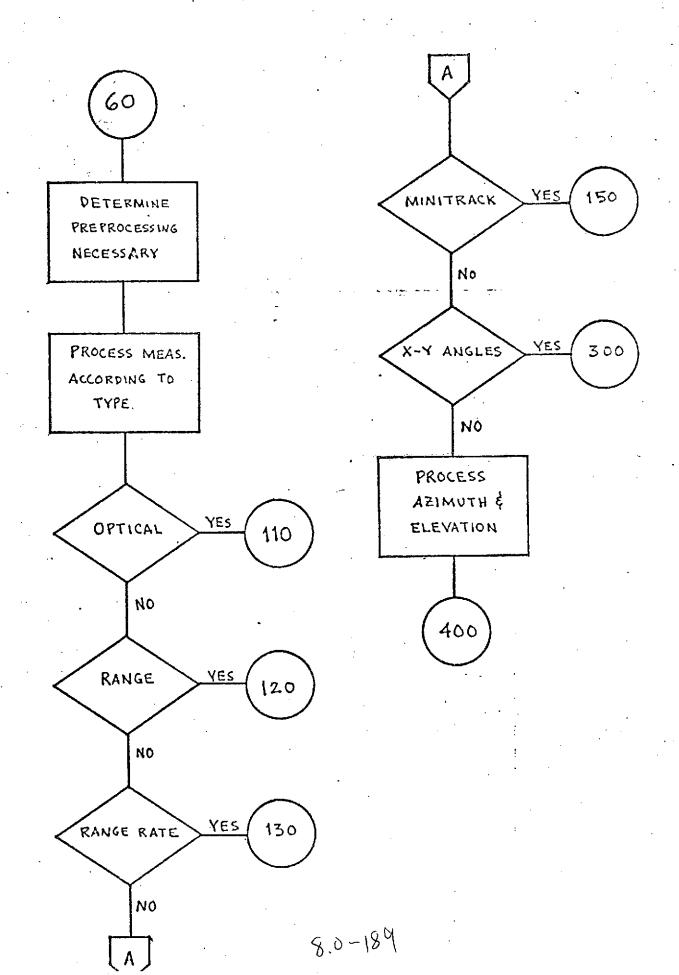


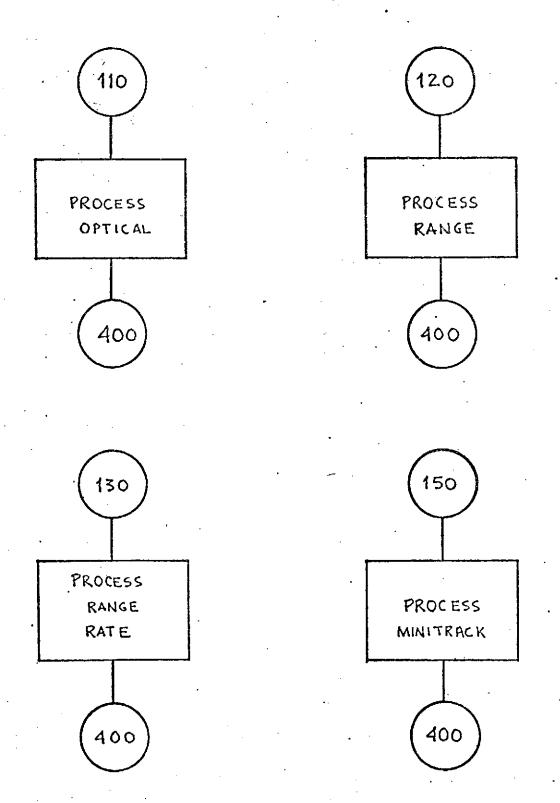
8.0-186

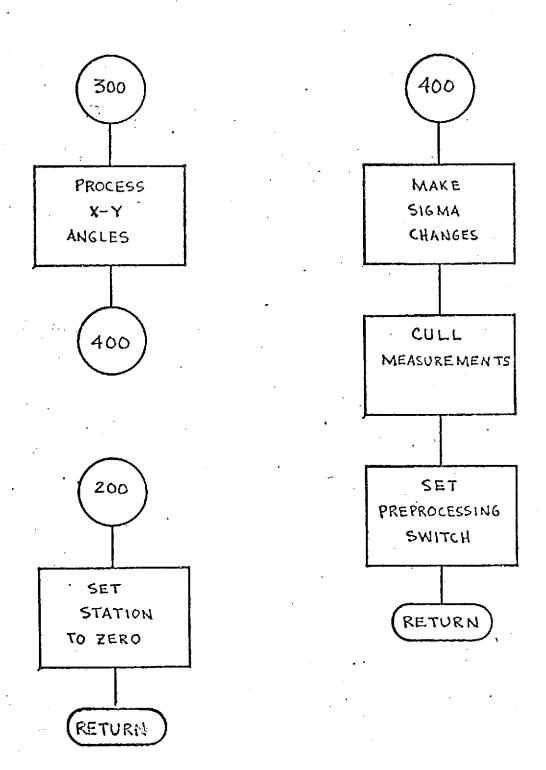












DPFCT

DESCRIPTION

DPFCT is a multi-purpose multiple entry point function. There exist 8 different points of entry:

DARCTN - is a double argument Arctangent Function providing function values between 0 and 2π raidians

DENORM - computes the denormalization factor for geopotential coefficients

DJUL - computes Julian dates when given dates as computed by subroutine YMDAY

DOTPRD - computes dot products

XEFIX - $X_{ECI}^*\cos \theta_G + Y_{ECI}^*\sin \theta_G$

YEFIX - $Y_{ECI}^*\cos \theta_G - Y_{ECI}^*\sin \theta_G$

XINERT - $X_{ECF}^*\cos \theta_G - Y_{ECF}^*\sin \theta_G$

YINERT - $Y_{ECF}^*\cos \theta_G + X_{ECF}^*\sin \theta_G$

NAME

OPPC T

PURPOSE

MULTI-PURPOSE MULTIPLE ENTRY POINT FUNCTION

ENTRY POINT

PURPCSE

DARCTN

10 COMPUTE THE ARCTANGENT BETWEEN O & TWO PI

DENORM

TO COMPUTE THE DENORMALIZATION FACTOR FOR

CEOPOTENTIAL CREFFICIENTS

DJUL

TO COMPUTE JULIAN DATE FOR AN INPUT TIME IN DAYS FRUM JAN 0.0 CF THE REFERENCE YEAR FOR THE ARC

DOTPRO

TO COMPUTE THE OCT PRODUCT OF 2 THREE DIMENSIONAL

VECTORS

XEF1X

GIVEN INERTIAL X AND Y FETURN EARTH FIXED X

XINERT

GIVEN EARTH FIXED X AND Y

RETURN INERTIAL X

YEFIX

CIVER INERTIAL X AND Y RETURN EARTH FIXED Y

YINERT .

CIVEN EARTH FIXED X AND Y

FETURN INERTHAL Y

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

CALLING SEQUENCE CARCTN(Y:X)

SYMBUL TYPE

CESCRIPTION

v .

INPUT - R*SIN(A)

x

. DP

UP

INPUT - R#CDS(A)

DARCTN DP

CUTPUT - ARCTANGENT OF ANGLE A IN RADIANS BETWEEN O AND +2PI RADIANS

CALLING SEQUENCE CENCRM(N.M)

TYPL

DESCRIPTION

SYMBCL

INPUT - DEGREE OF LEGENDRE POLYNOMIALS

ш

INPUT - DRDER OF LEGENDRE POLYNOMIALS

DENOFM D

CUTPUT - DENORMALIZATION FACTUR

CALLING SEQUENCE CUUL(X)

TYPE DESCRIPTION SYMHOL INPUT - TIME IN DAYS FROM JAN 0.0 OF THE REFERENCE YEAR CUTPUT - JULIAN DATE CALLING SEQUENCE COTPRD(A.B) CESCRIPTION SYMBOL TYPE INPUT + CUMPONENTS OF VECTOR A (3) INPUT - COMPONENTS OF VECTOR B 8 (3) CUTPUT - DOT PRODUCT OF VECTORS A & B PAG CHATEG CALLING SEQUENCE XEFIX(X,Y) SYMBEL TYPE CESCRIPTION INPUT - INERTIAL X DΡ INPUT - INERTIAL Y. DP CUTPUT - EARTH FIXED X POSTTIUN XEF 1 X CALLING SEQUENCE XINERT(X.Y) DESCRIPTION SYMBOL TYPE INPUT - EARTH FIXED X OP REPRODUCIBILITY OF THE ' INPUT - EARTH FIXED Y ORIGINAL PAGE IS POOR .CUTPUT - INERTIAL X XINERT OF CALLING SEQUENCE YEFIX(X,Y) CESCRIPTION SYMECL TYPE INPUT - INERTIAL X DΡ INPUT - INERTIAL Y OP CUTPUT - EARTH FIXED Y POSITION YEFIX

CALLING SEQUENCE YINERT(X.Y)

*CESCEIPTION SYMBOL: TYPE INPUT - EARTH FIXED X υÞ INPUT - EARTH FIXED Y 4Q CUTPLT - INERTIAL Y YINERT "DP SUBROUTINES USEC YAGMY INITBK CCMMUN ELECKS CONSTS CSTHET NONE INPUT FILES ' NONE DUTPUT FILES

		•	DPFC 131
•	DOUGLE PRECISION FUNCTION DAR	CTN(Y, X)	OPFC 132
	IMPLICIT REAL #8 (A-H, O+Z) -	•	DPFC 133
	CCM.JON/CSTHET/CTHETG, STHETG	·	DPFC 130
	CCMWON/CUNSTS/FI.T.ACPI.ORAD.E	`R \$EC .	DPFC 135
	CCMAUNINITEK/161 (49) INDUIST.	162(7) ,	OPEC 134
	LCGICAL NOJIST	· ·	DPFC 137
	DARCTN=DATAN2(Y+X)		DPFC 136
	IF (CARCTH-LT. U.ODO) DAFCTN=TV	KOF1+DAFCTN	DPFC 139
	RETURN	•	DPFC 140
	ENTRY DENORM(N.M)		58FC 141
	1F(K.Ed.0)GC TC 120	•	DPFC 197
	XN=4.000#3FLOAT(N)+2.000	•	DPEC 143
	KMV1=K+M+1	-	DPFC 144
	NPF=N+M		DPFC 145
	FACT=1.DO	REPRODUCIBILITY OF THE	DPFC 146
	DO 110 1=NMM1+NPM	REPRODUCIDADE IS POOR.	DPFC 147
110	FACT=FACT+DFLCAT(I)	ORIGINAL PAGE IS POOR .	DPFC 148
	XN=XN/FACT		Dbac 1v6
	GD TO 133		DPFC 150
120	XN=2.000#0FLUAT(N)+1.000		DPFC 151
	DENCRM=DSURT(XN)	r	DPFC 153
	RETURN .		DPFC 153
	ENTRY DUUL(X)		DPFC 150
	IF(NDJIST) GU TO 10	•	DPFC 155
	NOUIST=.TRUE.		DPFC 156
	DJ=2433251.500-YMCAY(500100.	0.C.ODO)	DPFC 157
10	DJUL=CJ+X		DPFC 158
	RETURN	•	DPFC 159
	ENTRY DUTPRO(A.E)		DPFC 160
	DOUBLE PRECISION A(3).8(3)		-
	DUTPRU=A(1) *E(1)+A(2) *B(2)+A	(3)*3(3)	DPFC 161
	RETURN		DPFC 162
	ENTRY XEFIX(X:Y)	•	DPFC 163
	XIF 1A=X*CTHET C+Y*STHETG	•	OPEC 164
	RETURN	•	DPFC 165
	ENTRY XINERT(XIY)		DPFC 16t
	XINERT=XKCTHCTC-YASTHETG		DPFC 167
	•		•

DPFCT Page 5 of 5 October 1972

RETURN
ENTRY YEFIX(X+Y)
YEFIX=Y*CTHETC+X*STHETG
RETURN
ENTRY-YINCKT(X+Y)
YINCKT=Y*CTHETC+X*STHETG
RETURN
END

DPFC 155 DPFC 170 DPFC 171 DPFC 172 DPFC 173 DPFC 176 DPFC 176

DPAG

ENTRY POINT PURPOSE DRAG1 INITI ALI ZATI GN TO COMPUTE ACCELERATION IN RECTANGULAR COORDINATES DRAG DUE TO AERO-DYNAMIC DRAG FORCES CALLING SEQUENCE CALL DRAGI(GREAR) SYMBOL TYPE DESCRIPTION GRPAR OUTPUT - PARTIALS OF FORCE MODEL PARAMETERS DP (1) CALLING SEQUENCE DRAG(RASAT.DX.DT) DESCRIPTION SYMBOL TYPE INPUT - RIGHT ASCENSION OF SATELLITE RASAT DP INPUT & OUTPUT - SATELLITE ACCELERATION VECTOR DX DP INPUT - TIPE IN DAYS FROM EPOCH D₽ CESS SERITION SEED DENSTY INTBLK COMMON BLOCKS DRGBLK XYZ INPUT FILES NONE DUTPUT FILES NONE . GEODYN SYSTEMS DESCRIPTION . REFERENCES VOLUME 1 - GEODYN COCUMENTATION REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR SUBROUTINE DRAGI (GRPAR) DRAG 41 IMPLICIT REAL #8 (A-H+C-Z) ' 42 DOUBLE PRECISION DX(3),X,Y,Z,XDCT,YDOT,ZDOT,R,ESQ,THDT2S,AE,RASAT DRAG 43 INTEGER ACORTADORD DRAG 44 DIMENSION GEPAR(1) DRAG 45 COMMON/DRGBLK /HT: SPSI 50.C(4).C3.C1.VEL.XDCTR.YDDTR.RHO DRAG 4.5 COMMON/XYZ/X, Y,Z,XOCT,YOOT,ZOOT,R,RSQ,ISAT, IFGRCE(2) DRAG 47 COMMON/INTOLK/THOOT1(2).THOT2S.GM.AE.AESO.FLAT.FSO32.FFSO32. DRAG 42 GM3(6),8(2),DDDT(2),BD(2),AFGM(3B),ADDR(2),ACCFD(2),SRAC(5) DRAG 45 RE TURN DRAG 50 ENTRY DRAG(RASATIDX (DT) DRAG 51 SP SI SQ=Z + +2 /R SQ -DRAG 52 HT=R-AE-(FS032 # SPSI SQ * #2-FFS C32 #SP5 IS C) **DRAG** 53 C OBTAIN ATMOSPHERIC DENSITY DRAG 50

DRAG

NAME.

RHO=DENSIY(RA SAT)

XDOTR = XDOT+ THD T2S +Y YDOTR=YDOT-THOTES+X VEL = XDO TR * * 2+ YD OTR * * 2 + ZDST # * 2 VEL=D SORT(VEL) C3=VSL*RHO C1=C3*(B(ISAT)+BDOT(ISAT)*DT) C SUM IN ACCELERATION OUE TO DRAG DX(1)=0 X(1)-C1 * XDOTR DX(2) =0 x(2)-C1 *YOOTR DX(3)=0 X(3)-C1 * 7D CT IND=IFORCE(ISAT) *3 IF (ADDR (ISAT) .EQ. 0) GO TO 100 C COMPUTE PARTIALS FOR DRAG E+CMI=DMI (T A2 I) 08*E 0-= 20 GRPAR(1)=C2 *XDDTR GRPAR(2)=C2 *YDCTR GRPAR(3)=C2 #ZDOT 100 IF(ADDRD(ISAT).EQ.C) RETURN C COMPUTE PARTIALS FOR DRAG RATE C2=-C3*B0(I SA T) +DT GRPAR(IND+1)=C2 *XDOTR GRPAP(IND+2)=C2 *YDOTR GRPAR(IND+3)=C2 *ZDOT RE TURN END

DRAG 55 DRAG 57 DRAG 53. DRAG 59 DRAG 60 DRAG DRAG €2 DRAG DRAG DRAG . 65 DRAG DRAG 67 DRAG 6 a DRAG 65 DRAG 70 71 DRAG DRAG 72 DRAG 73 DRAG 7± DR4G 75 DASC 75 DRAG 77 DRAG 7€ DRAG 75 DRAG έÇ DRAG €1

EGRAV

DESCRIPTION

EGRAV is the GEODYN System subroutine for determining the acceleration on the satellite due to the Earth's gravitation. Certain intermediate data are saved for use in subroutines VEVAL, RESPAR, AVGPOT and GEOIDH.

The intermediate data mentioned above are computed following the determination of the Earth-fixed spherical coordinates of the satellite. They are:

$$\frac{GM}{r}$$
 $\frac{a^n}{r}$

$$P_n^m$$
 (sin ϕ)

 $sin m \lambda$

cos m λ

PEPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

m tan o

for each m and/or n. Multiple angle formulae are used for the sine and cosines and the usual recursive relationships are used for the Legendre functions P_n^m (sin ϕ).

The accelerations are computed in Earth-fixed spherical coordinates and then converted to inertial Cartesian coordinates.

NAME	EGRAV			
PURPOSE	TO COMPUTE ACCELERATION DUE TO GRAVITY			
CALLING SEGIENCE	CALL EGRAV(THETG.PASAT.DX)			
SYMBOL TYPE	DESCRIPTION			
THET'S OF	INFUT - APPARENT RIGHT ASCENSION OF GREENWICH			
RASAT 72	INPUT & OUTPUT - PIGHT ASCENSION OF SATELLITE			
פר אפ	DUTPUT - ACCELERATION VECTOR IN METERS/SECONDS**?			
SURROUTINE JSED	CLFAR			
COMMON BLOCKS	CSLIM FMODEL INITSK INTPLK XYZ VRELOK			
INPUT FILES	NONE			
CUTPUT FILES	NONE			
REFERENCES	GEDDYN SYSTEMS DESCRIPTION! VOLUME 1 - GEODYN DOCUMENTATION			

* ***NOTATION:* * *

PSI-LATITUDE (GEOCENTRIC)
LAMPDA-LONGITUDE (+EASTWARD)
R-GEOCENTRIC RADIUS TO SATELLITE IN EARTH RADII
GM-GRAVITATIONAL CONSTANT TIMES MASS OF EARTH
P(M,N)-CDEFFICIENTS OF LEGENORE POLYNOMIAL
C(N,M)-CDEFFICIENTS OF COSINE FUNCTION
S(N,M)-COFFICIENTS OF SINE FUNCTION
INDEXI-DEGREE OF SUMMATION PLUS 1

SUBFOUTINE SCRAV (THETG: PASAT DX)	REPRODUCIBILITY OF THE	EGRA	42
THOUTOIT DEALERIALH OFT		FGRA	4.3
LOGICAL NOTIST	ORIGINAL PAGE IS POOR	FGPA	44
INTEGER ULIMIT		EGPA	4.5
DOUBLE PRECISION WEDEL LAMBDA		EGPA	44
DIMENSION C(20.32).S(20.33).DX(3)		FGRA	47
- COMMON/CREIM/LEIMIT (31) +ULIMIT (31))	EGPA	4.9
COMMONIA MODELY INCIXI, INDEXE, INDEXE	3.IND:X4.CS(30.33).MODEL(3)	EGRA	40
COMMONZINITERZEGI(SC) -MOTIST-NSWI	(6)	FĢ₽A	50
COMMONATAL MERALITHOUS (P) CHAAS, 10HB	V(102)	ECOV	51
- COM 405/KY 7/X (Y , 7 , X COT , YOUT , 700 T , P)	PROTECT (15 PROTECT)	FGOA	5?
CONTRACTOR STATEMENT OF THE STATEMENT OF		FGPA	5. 7
• P(37.37).ADRN(30).TPSIM(33)		FGDA	54
EQUIVA NCE (TPSTH(2).TANOS1) . (C)	(1-1)-5(1-1)-68(1-11)-(9(1-1)-	EC54	55

```
= 6
                                                                               EGPA
              SINPS[).(P(2.1).COSPS[).(TPS[M(1).ZFRO)
                                                                                      57
                                                                               EGNA
 INITIALIZE SIMMATION INDICES
                                                                                      5 A
                                                                               EGRA
      IF (NOTIST) GC TO 100
                                                                                      50
                                                                               F.GPA
      CALL CLFAR (9,60,33)
                                                                                      60
                                                                               · FGƏA
      CALL CLEAR (TPS 1M+54+1)
                                                                                      ۴٩
                                                                               EGRA
      CALL CLEAP (LLIMIT. 31 + 1)
                                                                               EGPA
                                                                                      6,2
      CALL CLEAR (ULIMIT, 31 + 1)
                                                                               FGPA
                                                                                      €3
      255 D=3.00
                                                                               EGRA
      DO SO NOF2.INDEX2
                                                                                      65
                                                                               EGRA
      NS=31-NC 1 ...
                                                                               FGPA
                                                                                      65
      NI = MINC (NC+1 . INDEX 3)
                                                                                      £ 7
                                                                               EGRA
      DD 25 MG=2+N1
                                                                                      63
                                                                               FGPA
      MS= 34-MC
      IF(C(NC.MC).E0.0.00.AND.S(NS.MS).F0.C.D01GD TO 25
                                                                               EGPA
                                                                                      60
                                                                                      7^
                                                                               EGPA
      IF(LLIMIT(NC).EQ.J) LLIMIT(NC)=MC
                                                                               FGPA
                                                                                      7;
      ULIMIT(NC)=MC
                                                                               EGRA
                                                                                      72
  '25 CONTINUE
                                                                                      73
                                                                               EGRA
   50 CONTINUE
                                                                                      74
                                                                               FGRA
      NOTIST# . FRUE.
C PUT SATELLIFE IN EARTH CENTERED - EARTH FIXED PECTANGULAR COORDINATES FORA
                                                                                      75
                                                                                      76
                                                                               FGRA
  100 RASATEDATAN2(Y+X)
                                                                                      77
                                                                                FGPA
       XY50=X+02+Y**2
                                                                                      7 2
                                                                               FG₽A
      RTXYSQ=1SQRT (XYSQ)
                                                                                      70
                                                                                EGPA
      LAMPDA= YASAT-THETS
                                                                                      ٥٩
                                                                                egr a
      SINLAM(2) = DSIN(LAMPDA)
                                                                                      PI
                                                                                EGPA
       COSEAM(3) = DCCS (LAMBDA)
                                                                                FGPA
                                                                                      92
      .RSC=XYSOt Z##2
                                                                                FCDA
                                                                                      A Z
       RED SORT (ROO)
                                                                                FGRA
C SINE, COSINE, AND TANGENT OF LATITUDE
                                                                                FGPA
       SINPSI=7/R
                                                                                EGRA
       COSPSI=RTXYSC/R
                                                                                      87
                                                                                EGRA
       TANPSI= SINPSIZCESPSI
                                                                                EGPA
C CONVERT R TO FARTH RADII
                                                                                FGRA
                                                                                       99
       RINV=AF/P
                                                                                      9
C CALCULATE PILYNOMIAL TERMS
                                 ...NOTE... P TAKES FORM P(%,N)
                                                                                FGGA
                                                                                FGPA
                                                                                      91
       CPS=3.61# COSEST
       P(1,2)=1.500+SINPSI++2-.500
                                                                                FGPA
                                                                                       97
       P(2.2)=07745 INPS 1
                                                                                FGRA
                                                                                      C 3
                                                                                      04
       P(3.2)=CP3*CCSP51
                                                                                EGPA
                                                                                EGRA
                                                                                       95
       TPS IM (31=2.0C*TANPSI
C CALCULATE AND SAVE SINES AND COSINES OF LONGITUDE
                                                                                FGPA
                                                                                       061
                                                                                       97
       CER =2.01 * COSLAM(2)
                                                                                FGPA
       SINLAM(3) = CL2* SINL AM(2)
                                                                                FGPA
                                                                                       99
                                                                                EGRA
                                                                                       00
       COSLAM(A) = CL2*COSLAM(2)-1*DC
                                                                                EGRA 100
       GMF=GM/ ?
                                                                                FGRA
                                                                                      .01
       ADFN(2)=RINV**2#GMR
                                      DEPRODUCIBILITY OF THE
                                                                                EGRA 102
       DO 120 N=3.INDEX2
                                      CONCINAL PAGE IS POOR
       VAIR*(I-N)MPCA=(M)MTGA
                                                                                FGPA 103
                                                                                FGRA 104
       F1 = N
                                                                                FORA 'CE
       F2=51-1.00
                                                                                FGRA 104
       F3=2.00 x51-1.00
                                                                                FGDA 107
       F4 = F3 + C350 SI
                                                                                FGPA 'CH
       N1 = N-1
                                                                                EGRA 109
       けいキソース
                                                                                EGRA 110
C ZONAL HARYDYTES (MEÓ)
                                                      REPRODUCIBILITY OF THE COA '11
       P(:,N)=(P3#5 INPS I#P(1,M1)=F5#P(1,N2))/F1
                                                      ORIGINAL PAGE IS POOR
```

```
EGRA 112
      IF(INDEX3.LT.2)GD TO 120
                                                                             FGPA'113
     (S+EXBONI, N) ON IMPXM:
                                                                             EGPA 114:
      DO 110 M=2.NX
                                                                             FGP4 115
C TESSERAL HARMONICS (M NON-ZEROW LESS THAN N)
                                                                             EGPA 116
      P(M_*N) = P(M_*N2) + F4*P(M-1*N1)
                                                                             EGRA 117
      TECNX . LT . NIGO TO 120
                                                                             EGRA 11A
      NN1 =N+1
                                                                             FGRA 119
C SECTORAL HARMONICS ( MEN. NON-ZERO)
                                                                             EGPA 120
      P(NN1.N)=F44P(N.N1)
                                                                             EGPA 12!
      TOSIN(HALL) = TPSIM(N) + TAMPSI
                                                                             EGPA 122
      SINEAM( THE ) = CE 2 * SENEAM(N) - SENEAM(N1)
                                                                             EGRA 123
      COSLAM(NN) )= CL2# CDSLAM(N) - CDSLAM(N))
                                                                             EGPA 124
1.20
      CONTINUE
                                                                             EGPA 125
C INITIALIZATION FOR SUMMATION FOR PARTIALS
                                                                             EGRA * 26
140
      00.0≈00
                                                                             EGPA 127
      PLAMDA=1.00
                                                                             FGPA 12P
      PPSI=0.00
                                                                             £668 150
      FN1=2+05
                                                                             ECDA 130
C' SURMATION FIR PARTIALS
                                                                             EGPA 131
      00 256 NC=2.INDEX2
                                                                             FGPA *32
      NS = 31 - NC
                                                                             FGRA 133
      FN1 =FN1+1 + DC
                                                                             EGRA 134
      DLAMDA=0.00
                                                                             EGPA 135
      F1=C(NC+1)*CCSLAM(1)
                                                                             EGOA 136
      DP=F1 AP( .. NC)
                                                                             EGNA 137
      DOS 1=F1:(P(2,RC)-TPS IM(1)*P(1,MC))
                                                                             EGPA 138
    ···»KEU≠ELTATT(NC)
                                                                             E684 109
      EMERLE - POUR GO ID 225
                                                                             FGRA 140
      NI #ULIMIT (NC)
                                                                             FGPA 141
      FU=NLL-1
                                                                             FGRA 142
      DO 200 MC=NLL.NI
      MS = 34 - MC
                                                                             FGRA 143
      PI=P(VC, NC)
                                                                              FGDA 144
C PARTIAL WRT LAWARA (SUMMATION)
                                                                              EGRA 145
      DLAMOA=DLAMOA+FM=P1*(S(NS+MS)*COSEAM(MC)+CCNC+MC)*S[NLAM(MC))
                                                                              FGPA 'A6
      F1 = C(NC. MC) = COSEAM(MC)+S(NS. MS) = SINEAM(MC)
                                                                              EGRA '47
      IF(F1.50.) .Delgo TO 200
                                                                              EGPA 148
C PARTIAL WRI - (SUMMATION)
                                                                              FGRA 160
                                                                              ECOA . CV
      り段=り2+F1 * 21
C PARTIAL WAT AST (SUMMATION)
                                                                              EGPA 151
      DPSI=DPTI+F1*(P(MC+1+NC)-TPSIM(MC)*P1)
                                                                              FGRA 152
      FV=FV+1.00
                                                                              EGPA 153
20.0
      PLA YOAH PLAMBAHDL AMDAK AGRN (NC.)
                                                                              EGRA 154
  225 PR=PR+DP*FN1*AOPN(NC)
                                                                              EGPA 155
 250 PRSI=PRSI+DRSI #ACRN(NC)
                                                                              EGPA 156
C COMPLETE PARTIAL WET R
                                                                              EGRA 157
      PR=={(GMD+PR})/R
                                                                              FORK 158
C CONVERT ACCELERATION IN SPHERICAL COMPDIMATES TO ACCELERATION IN
                                                                              FGPA 159
C RECTANGULAR COORDINATES (MULTIPLY BY MATRIX OF PARTIALS OF SPHERICAL
                                                                              FGPA 160
C WITH RESPECT TO RECTANGUL ART
                                                                              EGRA 161
                                                                              EGPA 162
      PRE =PR/ 2
                                                                              EGPA 163
      PLXY=PLAMDAZXYSQ
      DET BEOF 3-0951* 77 (BIKY 5048501
                                                                              EGRA 164
                                                                              FG04 165
      DK(!)=K:DDID=DFXAKA
      "NK(2)=Y**PTO+PLXY**
                                                                              FGPA 164
                                          FERODUCIBILITY OF THE
      ECOV 167
       70,741.48
                                          ORIGINAL PAGE IS POOR
                                                                              FOOA 169
      ENF
                                                                              EGRA TAG
```

RETURN

GRIGINAL PAGE IS POOR

ELEM

DESCRIPTION

ELEM converts the inertial rectangular components of the position and velocity vectors of a satellite to the corresponding osculating Kepler elements.

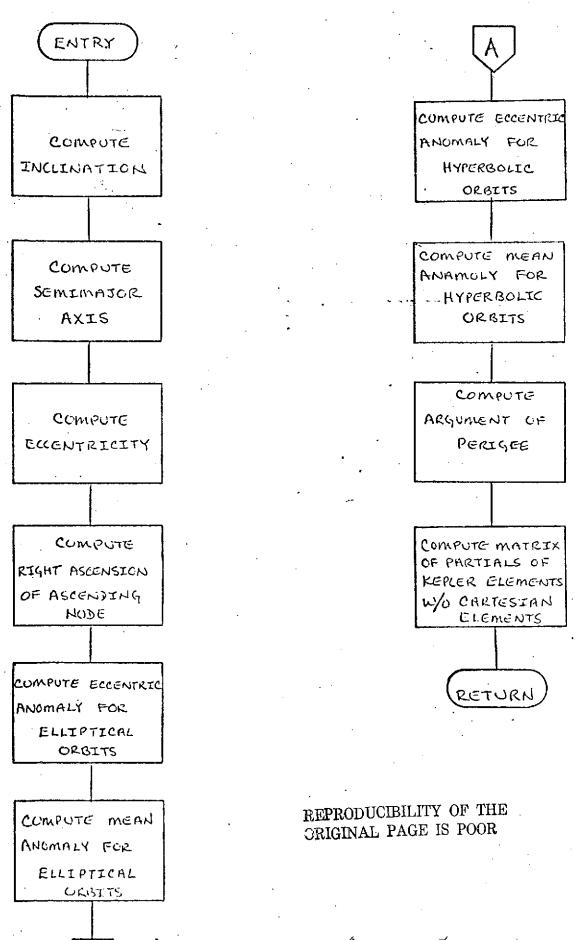
Subroutine ERROR is invoked if the square of the eccentricity is not less than one.

NAME	ELEM
PURPOSE	10 CONVERT INERTIAL POSITION AND VELOCITY VECTOR TO OSCULATING ORBITAL ELEMENTS
CALLING SEGUENCE	CALL ELEM(XYZ+AEI+1DRAD+FRSTHE+AEIXYZ)
SYMEOL TYPE	EESCRIPTION .
XYZ 05	INPUT - CARTESIAN ELEMENTS
AEI DP	OUTPUT - KEPLER ELEMENTS
IDRAD I	INPUT - =3 - CUTPUT IS IN RADIANS AND PARTIAL MATRIX IS REQUESTED =2 - CUTPUT IS IN RADIANS =1 - CUTPUT IS IN DEGREES
FRSTME L	INPUT - FIRST TIME SWITCH
4E1XY2 00	CUTPUT - PARTIALS OF KEPLER ELEMENTS WITH RESPECT TO X, Y, Z
SUBROUTINES USEE	ERROR
CGMMON ⊹BULCKS	MALPHRO MEELEM CONSTS INTOLK
INPUT FILES	NONE REPRODUCIBILITY OF THE REPRODUCIBILITY OF THE
CUTPUT FILES	REPRODUCIBILITY OF ORIGINAL PAGE IS POOR ORIGINAL PAGE IS POOR
FEFERENCES .	VOLUME 1 - GECCYN DOCLMENTATION

		8	
	SUBBULTINE ELER(XYZ.ZEI.IDRAD.FRSTME.AEIXYZ)	ELEM	40
	IMPLICIT REAL * E (A-H+0-Z)	ELEM	6.1
•		ELEM	42
	LOGICAL FREINE, HYPER, HYPSW	ELEM	43
	REAL AMSTOT	ELEM	40
	DOUBLE PRECISION INCL.MEAN. NODE	SLEM	45
	DIMENSIUM AEI(E).XYZ(5).AEINPM(E).XYZXYZ(6).AEIXYZ(6.3.2).PHIP(3)	ELEM	46
	COMMON/ALPARC/ALPHA(54). HYPSW		
	CCNWON/CELEN/LUM(24),XNU.EC.RMSTUT	ELEM	67
	CDMWUN/CUNSTS/F1.T%CPI.RAD.RSEC	ELEM	ع ج
	COMMINATORE KATHOOTS (3) + GM+ AE(62)	ELEM	45
	EQUIVALENCE (A.AEINOM(1)). (E.AEINPM(2)). (INCL.AEINPM(3)).	ELEM	.50
	(MCDC, ACINEM(4)), (P.AEINPM(5)), (NEAN, AEINPM(5)),	ELEM	51
	(A.XYZXYZ(1)).(Y.XYZXYZ(2)).(Z.XYZXYZ(3)).	ELEN	. 5 <i>2</i>
	(X1X72X72(1774(14X12X12X2X12(5)),(ZDJT,XYZXYZ(6))	ELEM	53
		ELEM	5 4
	DO 10 I=1.0	ELEM	55
10	xxzxxx(1)=xxz(1)	E- 6 '''	

```
ELEM
      R=DSGRT(X 4 * 2 + Y * #2 + Z * * 2 )
                                                                              ELEM
                                                                                     57
      VSC#AUG1*#2+YELT*#2+ZDOT*#2
                                                                              ELEM
                                                                                     5B
      C1=Y+20UT-Z*YELT
                                                                               ELEM
                                                                                     55
      C2=Z*XUUT~X*ZCCT
                                                                               ELEM
                                                                                     60
      C3=X4YDOT-Y4KCLT
                                                                              ELEM
                                                                                     ó 1
      HSQ=C15*2+C2**2+C3**2
                                                                               ELEM
                                                                                     62
      H=DSQRT(H50)
                                                                                     63
                                                                               ELEM
      CCSI=C3/H
                                                                                     46
                                                                               ELEM
      SIN 1=650KT (1.000-CCS1**2)
                                                                               ELEM
                                                                                     55
C CCMPUTE INCLINATION
                                                                                     -55
                                                                               ELEM
      INCL=CATAN2(SINI.COSI)
                                                                                     67
                                                                               ELEM
      IF (INCL-ET.0.000) INCL=INCL+TWOPI
                                                                               ELEM
                                                                                     53
      AINV=2.000/R-VEG/GM
                                                                               ELEM
                                                                                     50
C COMPUTE SEMI-MAJUE AXIS
                                                                                     70
                                                                               ELEM
      A=1.0CO/AINV
                                                                               ELEM
                                                                                     71
C COMPUTE ECCENTRICITY
                                                                               ELEM
                                                                                     72
      ESQ=1.000-H50+AINV/GM
                                                                               ELEM
                                                                                     73
      E=DSQRT(dSu)
                                                                               ELEM
                                                                                     74
      HYPER=#50.62.1.000
                                                                               ELEM
      IF (FYPOK "AND . FRSTME . AND . . NOT . HYPSW) CALL ERROR(1 . ESQ)
                                                                                     75
                                                                               ELEM
      IF (FYPCK.ANC..NOT. (HYPSK.OR.FPSTME)) CALL ERROR(2.ESQ)
                                                                               ELEM
      P=A*(I.UDU-ESC)
                                                                                     76
                                                                               FLEM
      P=A+(1.000-ESC)
                                                                                     7 9
                                                                               ELEM
      RRDLT=X#XU01+Y+YBOT+Z*ZDOT
                                                                               ELEM
      HS1=H+5INI
                                                                               ELEM
                                                                                      3.1
      SINN=CI/HSI
                                                                                      32
                                                                               ELEM
      CCSN=-C2/H5T
                                                                               ELEM
                                                                                      33
C COMPUTE LUNGITUDE OF ASCENDING NODE .
                                                                               ELEM
                                                                                      30.
      NOCE=CATANZ(SINN.CCSN)
                                                                               LLLM
                                                                                      35
     TIP (NOTE . L PAU . COO) NODE = NO DE + TKOPI
                                                                               ELEM
                                                                                      36
      PER=P/(E#R)
                                                                               ELEM
                                                                                      67
      SNU=RROUT * PER/F
                                                                               ELEM
                                                                                      36
      CNU=PER-1.000/E
                                                                                      89
                                                                               ELEM
      XNL=BATANS (SNL , CNU)
                                                                                      90
                                                                               ELEV
      IF (XNU-LT . O . OCC) XNU=XNU+TWOPI
                                                                               ELEM
                                                                                      91
      CEC=(CNU+2)/(1-000+E*CNU)
                                                                               ELEM
                                                                                      92
     .. SEC=(LSURT(DAES(1.000-ESQ)) *SNU)/(1.000+E*CNU)
                                                                               ELEM
                                                                                      93
      IF (HYPER) 60 TO 15
                                                                               ÈLEM
                                                                                      Qr.
      EC = CATAN2(SECICEC)
                                                                                      ō E
                                                                               ELEM
      IF(EC.LT. 0. ODC)EC = EC + TWOPI
                                                                               ELEM
C COMPUTÉ MEAN ANCMALY
                                                                               ELEM
      MEAN = LC - EFSEC
                                                                               ELEM
      GU TJ 10
                                                                               ELEM
   15 EC=LLCG(CEC+SEC)
                                                                               ELEM 100
       MEAN#E#SEC-EC
                                                                               ELEM 101
   16 CU=( X*COSN+Y*SINN)/R
                                                                               ELEM 102
       SU=((Y*COSN-X*SINN)#COSI+Z*SINI)/R
                                                                               ELEM 103
       U=DATAN2(SU.CL)
                                             REPRODUCIBILITY OF THE
                                                                               ELEM 106
       1F(U.LT.O.ODO)L=U+TWOPI
                                             ORIGINAL PAGE IS POOR
                                                                               ELEM 105
C COMPUTE ARGUMENT OF PERIGEE
                                                                               ELEM 106
       Pキモーストリ
       IF(P.LT.O.ODO)F=P+TWOPI
                                                                                ELEM 107
                                                                                ELEM. 108
       SCALL=1.0U0
                                                                                ELEN 109
       IF( JURAU.LG.11 SCALE=1.0DO/RAD
                                                                                ELEM, 110
       DO 20 1=1.6
                                                                                ELEM 111
       AEILL)=ALINPH(I)
```

		•	
	IF(1.LE.2) CJ TO 20	HERM	
	AEI(I)=AEINFM(I)*SCALE	EUCH	
	20 CONTINUE	ELEM	114
	1F (ILRAD.LT.3) FETURN	SUEM	115
•	COMPUTE PARTIALS OF KEPLER ELEMENTS W/O CARTESIAN ELEMENTS	ELEM	116
`	00 40 (=1.4	ELEM	
	PX=(4-1)/3	ELEM	119
	PY=1-F0J(1,2)	ELEM	119
	11=MOD(1,3)+4	ELEM	120
	12=MOC(11,3)+1	ELEM	121
	AETXYZ(1, 1, 1) = 2, OD C* A * * 2/R * * 2 * XYZXYZ(1)	ELEM	122
	AE1XYZ(1,1,2)=2.0D0*A++2*XYZXYZ(1+3)/GM	ELEM	123
,	DO 40 J=1.2	ELEM	124
	00 30 K=1.3	ELEM	125
	PHIP(K)=0.000	ELEM	125
	IF (1 ± C = K) GC TO 30	ELEM	127
	L=(4-J)+3-I-K	ELSM	128
	PH1F(K)=XYZXYZ(L)	ELEM	129
	IF (L.NE.11.ANC.L.NE.12) PHIP(K)=+PHIP(K)	ELSM	130
	30 CONTINUE	ELEM	1.31
	PHP=(C1*PHIF(1)+C2*PHIP(2)+C3*PHIP(3))/H	ELEM	1.3,2
	PR=2-J	ELEM	133
	PX=Fx #PX	ELEM	137
	PY=PR*PY	ELEM	135
	FR=PR*XYZXYZ(1)/R	ELEM	135
	AEIXYZ(2,1,J)=(H#AINV/2,000*AEIXYZ(1,1,J)-PHP)*H*AINV/(E#GM)	ELEM	137
	AEIXYZ(3.1.J)=(CCSI*PHP-PHIP(3))/HSI	ELEM	138
	AEIXYZ(4.I.J)=(SINN+(C3+AEIXYZ(3.I.J)+SINI*PHP)-PHIP(1))/C2	ELEM	139
	PUP = ((X #SINN + Y #COSN) #AE FXYZ (4 F F J) - COSN #P X - SINN #PY+CU #PR) / (H #SU)	ELEM	140
	PNUF=(c+(1.000-c50)*(A*PR+R*AZIXYZ(1.1.J))-(R*(R-A+(1.000+E50)))*	CLIM	151
	• AE 1XYZ (2.1.J))/(E SQ*R**2*SNU)	ELEM	142
	AEIXYZ(5,1,J)=FUP-PNUP	ELEM	143
	PECF=(AINV+(PR-R*AINV*AEIXYZ(1.1.J))+CEC*AEIXYZ(2.1.J))/(E*SEC)	ELEM	100
	AEIXY2(6.1, J)=R*AINV*PECP-SEC*AEIXY2(2.1.J)	ELEM	145
	40 CUNTINUE	ELEM	146
	RETURN	ELEM	147
	END	ELEM	148
		•	



8.0-208.

EPHEM

DESCRIPTION

EPHEM is a subroutine specifically designed to read an ephemeris tape prepared from a JPL planetary ephemeris tape but containing only those ephemerides used by GEODYN.

The ephemerides read by EPHEM are those of the Sun, the Moon, Venus, Mars, Jupiter, Saturn, and nutation in right ascension. Lunar and nutation data are provided on the tape at half day intervals. All other data are provided at 4 day intervals. Double buffers used by EPHEM provide GEODYN with 16 days of resident ephemeris data.

EPHEM interpolates the data to any desired time within the data span present on the data tape using a fifth order Everett scheme.

The data read and output by EPHEM is in true coordinates of date.

NAME **EPHEM** 1) READ LUNAR . SOLAR & PLANETARY EPHEMERIDES AND PURPOSE NUTATION IN RIGHT ASCENSION 2) INTERPOLATE THE DATA USING FIFTH ORDER EVERETT SCHEME CALL EPHEM(DAY. ONLYEQ) CALLING SEQUENCE DESCRIPTION SYMBOL TYPE INPUT - TIME AT WHICH DATA IS DESIRED IN DAYS FROM 90 DAY JAN 0.0 OF THE REFERENCE YEAR FOR THE ARC INPUT - TRUE REQUESTS ONLY NUTATION BE COMPUTED ONLYEQ L YMCAY TDIF SUBROUTINES USED ERROR COMMON BLOCKS CEPHEM INITEK INTBLK DATE - EPHEMERIS DATA FILE INPUT FILES **OUTPUT FILES** PRINTER "GECDYN OPERATIONS DESCRIPTION" - APPENDIX C REFERENCES VOLUME 3 - GECCYN COCUMENTATION *GEOLYN SUPPORT PROGRAMS* ~ EPHEMERIS TAPE GENERATOR T VOLUME 4 - GEODYN DOCKMENTATION

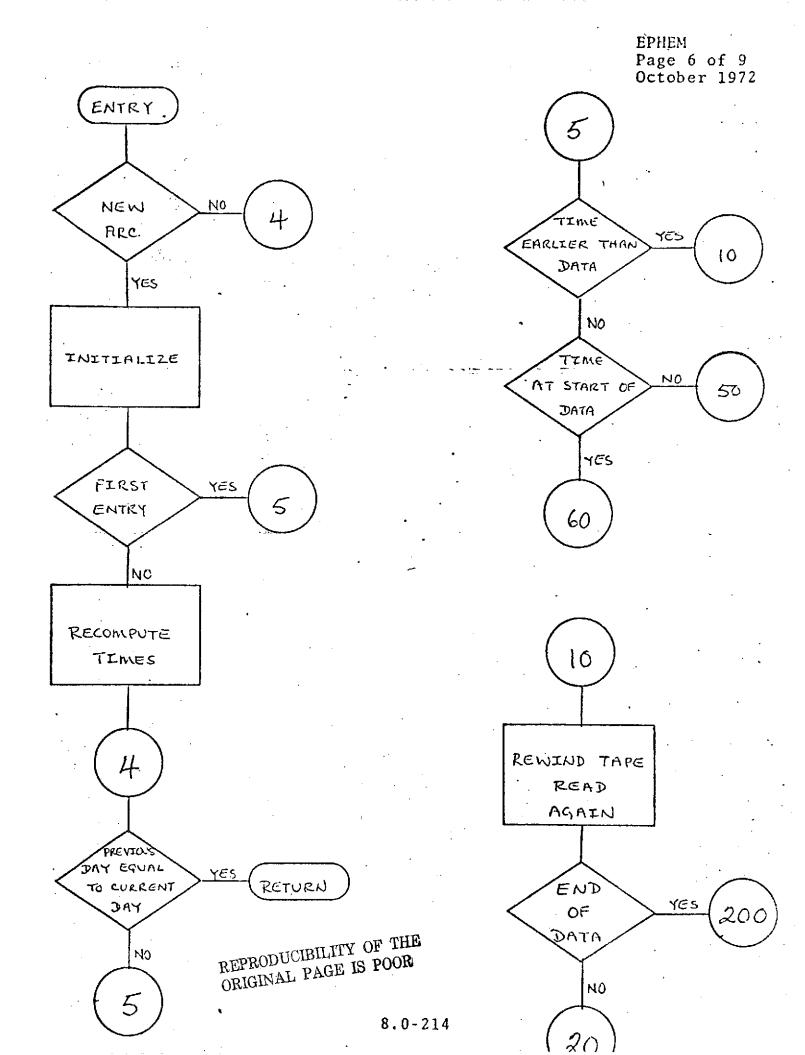
			•
SURROUTINE EPHEM(DAY.ONLY	EQ)	EPHE	36
IMPLICIT REALAS (A-H.O-Z)		EPHE	35
LOGICAL NOTISTICALYED		EPHE	35
INTEGER DATP		EPHE	37
REAL ANUTIBUETH BUFSHISEC	•	EPHE	38
DIMENSION DUE INI (51) SUF 1	M2(S1).OUF1M3(51).BUF2M1(51).	EPHS	35
	BUF1S(27), EUF2S(27), BUF1VM(54),	EPHE	4.0
	BUF2JS(54),BUF1N(51),BUF2N(51),IYMD(2),	EPHE	41
1HM(2), SEC(2)		EPHE	42
	N(306), SUN(270), ANUT(102), DUMMY(16)	EPHE	43
CCMMUNZINITEKZIGI (51) NOT		EPH5	44
COMMUNZINTOLKZIHOOTI(2).T		EPHE	45
	OON(1)),(8LF1M2(1),PMJON(32)),	EPHE	56
	.(EUF2M1(1),PMODN(154)),	EPHE	47
•	,(BUF2M3(1),PMOJN(256)).	EPH5	48
(auris(1).SUN(1)).(BUF		EPHE	ÀΩ
(BUF1J5(1),EUN(82)),(8		EPHE	50
(BUF2VM(1).SUN(163)).(EPHE	51
(BUF1N(1), ANUT(1)), (BU		EPHE	52
(3.FS0)		EPHE	53
CATA CATP/1/		EPHE	5A
CATA LAYK/39994000/	•	EPHE	55
[A]A [A]R/99994000/	REPRODUCIBILITY OF THE	Crite	-5
	ORIGINAL PACE TO		

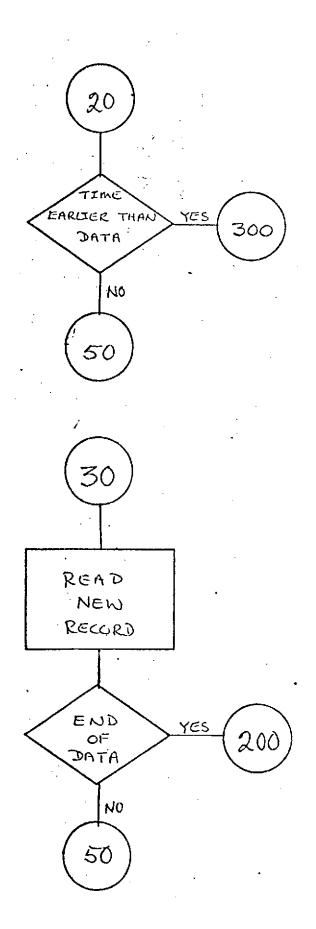
ORIGINAL PAGE IS POOR

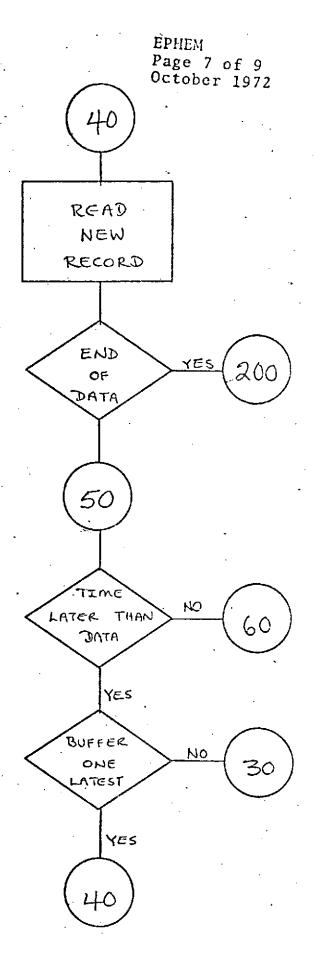
```
ENHE
                                                                                     56
      #2(5)=5+(5++2-1.0D0)/6.0D0
     . FA(5,Fa2)=Fa24(5+5-4.000)*0.60+01
                                                                               EPHE
                                                                                     57
                                                                               EPHE
                                                                                     5€
      IFTNUT13T1 GO TO 4
                                                                               EPHE
                                                                                     39
C INITIALIZE
                                                                               EPHE
                                                                                     60
      NCTIST=.TRUE.
                                                                               EPHE
                                                                                     61
      I-YCUSA=YSOBM
                                                                               EPHE
                                                                                     62
      IBDCY=KBCDY#4
                                                                                     63
                                                                               EPHE
      FACTOR=1.000762.30200
                                                                              EPHE
                                                                                     54
      IF(EAYR.GT.SYSE.DO) GO TO 5
                                                                                     65
                                                                              EPHE
      SEC1=SEC(1)
                                                                              EPHE
                                                                                     65
C IF NOT FIRST ENTRY THEN RECOMPUTE TIMES
                                                                              EPHE
                                                                                     67
      DAYRI=YMDAY(IYMD(1), JHM(1), SEC1)
      SEC1=5LC(2)
                                                                               EPHE
                                                                                     53
                                                                              EPHE
                                                                                     69
      DAYR2=YMJAY(1YMD(2), 1HM(2), SEC1)
                                                                              EPHE
                                                                                     70
      IF (N.EQ.1) GC TO 2
                                                                              EPHE
                                                                                     71
      CAYC=CAYR1
                                                                                     72
      CAYF=CAYR2
                                                                              FPHF
      GO TU 3
                                                                                     73
                                                                               EPHE
                                                                                     74
    2 CAYOSCAYR2
                                                                              EPME
      CAYM=CAYRI
                                                                              EPHE
                                                                                     75
    4 IF(CAYPRV.EG.CAY) RETURN
                                                                              EPHE
                                                                                     76
    5 IF(EAY-JAYR) 10,60,50
                                                                              EPHE
                                                                                     77
C IF DATA IN CORE LATER THAN REQUESTED TIME THEN REWIND TAPE AND READ
                                                                              EPHE
                                                                                     75
C AGAIN
                                                                                     79
                                                                              EPHE
                                                                                     30
   10 REWIND DATE
                                                                              EPHE
      READ(CATP.END=200) IYMD(1).IHM(1).SEC(1).BUFIN.BUFIS
                                                                              EPHE
                                                                                     81
      "READ(DATP . END = 200) EUF1 M1
                                                                              EPHE
                                                                                     92
      READ(CATH.END=200) BUF1M2
                                                                              EPHE
                                                                                     33
     --REAL(LATH, END-200) - BUF1M3
                                                                              EPHE
                                                                                     34
      REAC(CATP + END = 200) BUFIVM
                                                                              EPHE
                                                                                     65
      READ(DATP, END=200) BUFIJS
                                                                                     ÷.
                                                                              EPHE
      IF(TYMO(11.EQ.C) GG TO 200
                                                                              EPH5
                                                                                     87
      SECI=SEC(1)
                                                                              EPHE
                                                                                     38
      CAYR1=YMDAY(IYMD(1),IHM(1),SEC1)
                                                                              EPHE
                                                                                     40
      READ(DATH LEND 200) IYMD(2), IHM(2), SEC(2), BUF2N, BUF2S
                                                                              EPHE
                                                                                     30
      REAC(CATP, END=200) BUF2M1
                                                                              EPHE
                                                                                     O.L
      REAC(DATP . END = 200) BUF2M2
                                                                              EPHE
                                                                                     92
      EMSTUR (005=603.9TAT) 5ARA
                                                                              EPHE
                                                                                     93
      REACIDATE . ENJ = 2001 BUF2VM
                                                                              EPHE
                                                                                     36
      REAC(DATP.ENJ=200) BUF2JS
                                                                              EPHE
                                                                                     25
      1F(1YMJ(2).E0.C) GO TO 200
                                                                               SPHE
                                                                                     96
      SEC1=SEC(2)
                                                                               EPHE
                                                                                     97
      CAYR2=YMDAY(1YMD(2).1HM(2).SEC1)
                                                                              EPHS
                                                                                     99
      CAYK= CAYK1
                                                                              EPHE
                                                                                     25
      DAYC= DAYR2
                                                                              EPHE
                                                                                    100
      N=1
                                                                              EPhE
                                                                                    101
   20 IF (LAY-DAYR) 300,60,50
                                                                               EPHE
                                                                                    102
C'READ NEW RECORD
                                                                              EPHE
                                                                                    103
   30 READ(DATP, END=200) IYMD(1), IHM(1), SEC(1), BUF1N, BUF1S
                                                                              EPHE
                                                                                    104
      READ(DATP+END=200) BUF1M1
                                                                               EPHE
                                                                                    105
      READ(CATP.END=200) BUF1M2
                                                                               EPHE
                                                                                    100
      READ(DATP.END=200) BUF1M3
                                                                               EPHE
                                                                                    107
      READ(CATP, END≃200) BUF1VM
                                                                               EPHE
                                                                                    108
      REAC(DATP, END=200) BUFIUS
                                                                               EPHE 109
      IF (IYNU(1)+EQ+() GC TO 200
                                                                               EPHE 110
                                     PERRODUCIBILITY OF THE
                                                                               EPHS 111
                                     ORIGINAL PAGE IS POOR
```

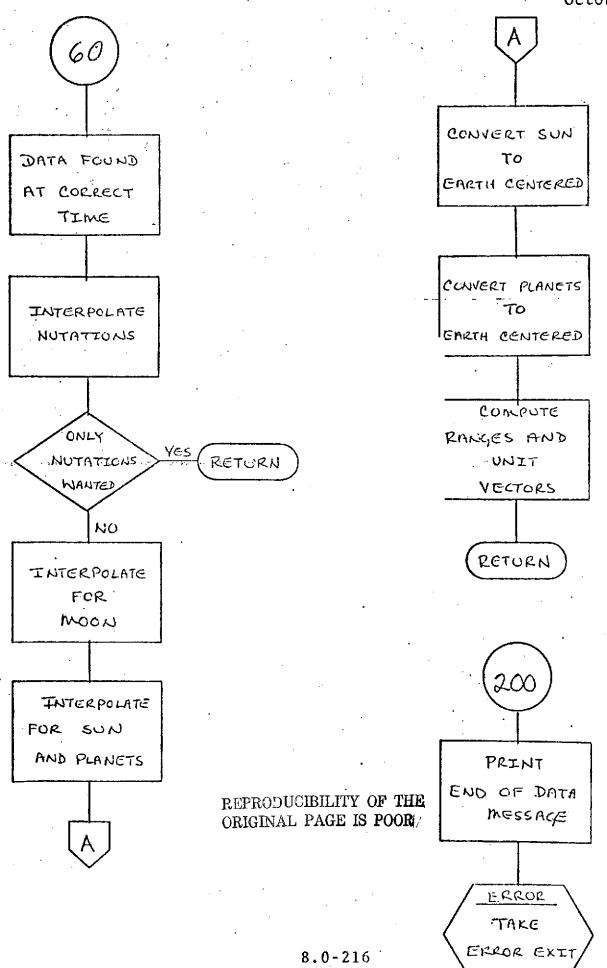
```
EPHE 112
     . 3FC1=SEC(1)
                                                                             EPHE 113
      DAYRI=YMDAY(IYND(I).IHM(I).SEC1)
                                                                             EPHE 116
     · CAYR= CAYO
                                                                             EPHE 115
      DAYG=CAYR1
                                                                             EPHE 116
      GU TU SO
                                                                             EPHE 117
C PEAD NEW RECORD
                                                                             EPHE 115
   40 REAU($\text{ATP.ekb=200} IYMD(2).IHM(2).SEC(2).BUF2N.BUF2S
                                                                             EPHE 119
      REAU(LATP; END=2001 BUF?M1
      READICATP . CND = 2001 BUF2M2
                                                                             EPHE 120
      REAUCDATP + END = 2001 BUF2M3
                                                                             EPHE 121
                                                                             EPHE 122
      REAC(CATP. aND=200) BUFZVM
                                                                             EPHE 123
      REAULDATP . END = 200 ) BUF2JS
                                                                             EPHS 124
    . N=1
                                                                             EPHE 125
      SEC1=SEC(2)
                                                                             EPHS 126
      CAYR2=YMDAY(IYMD(2),IHM(2),SEC1)
                                                                             SPHE 127
      CAYR=DAYO
                                                                             EPHE 128
      DAYU=CAYR2
                                                                             EPHE 129
   50 IF(DAY.GT.DAYC+2.000) GU TO (30.40) N
                                                                             EPHE 130
C DATA FOUND AT CORRECT TIME - INTERPOLATE
                                                                             EPHE 131
   60 CAYI=DAYO
                                                                             EPHE 132
      K=MLC(N,2)+1
                                                                             EPHE 133
      IF(LAY.GE.DAYO) GO TO 70
                                                                             EPHE 134
      CAYI-DAYR
      K = N
                                                                             EPHS 135
   70 INDEX=IDINT((LAY-DAYI)*2.000)
                                                                             FPHS 135
                                                                             EPHE 137
      CAY1=CAY1+0.3CC+DFLOAT(INDEX)
                                                                             EPHE 133
      5=(CAY-DAY1) +2 +000
                                                                             EPHE 132
      F0S=1.000-5
    "F52=F2(5)
                                                                             EPHE 140
      F25=F2(F03)
                                                                             EPHS 141
                                                                             EPHE 142
      F45=F4(F05,F25)
                                                                             EPHE 143
      FS4=F4(S.F52)
                                                                             EPHE 154
      INDEX 0= INDEX * 3 + (K-1) * 51
                                                                             EPHE 145
C ... NUTATION
      A0(20)=ANUT(INCEXO+3)*F45 + ANUT(INCEXO+6)*F54 +
                                                                             EPHE 135
                                                                             EPHE
             ANUT(INCEXO+2) #F2S + ANUT(INCEXO+5) #FS2 +
                                                                                  167
     1
                                                                             EPHE 142
     2
             ANUT(INCEXO+1) *FOS + ANUT(INCEXO+4) *FSO
                                                                            . EPHE 149
      A0(25)=A0(25)+101F(1,4.DAY)+THET25
      CAYFRV=1.00+50
                                                                             EPHE 150
C IF DNLY NUTATION REQUESTED, RETURN-
                                                                             EPHE | 151
                                                                             EPHE 152
    . IF(ENLYEQ) RETURNS
                                                                             EPHE 153
      INDEX5=(K-1)+153+IN0EX*9
                                                                             EPHE 154
      INDEXc=INDEX5+9
                                                                             EPHE . 155
C ...LUNAR EPHEMERIS
                                                                             EPHE 156
      DO 90 I=1.3
                                                                              EPHE 157
      1.3 = 14.3 - 3
                                                                             EPHE 155
      INDEXI=INDEXE+13
      INDEX2=INDEX0+I3
                                                                            , EPHE 150
   90 A0(1)=PMOUN(INCEX1+3)*F45 + FMCON(INCEX2+3)*F54 +
                                                                              EPHE 160
             PMOON(INCEX1+2)*F25 + PMCON(INDEX2+2)*F52 +
     ı
                                                                            EPHE 151
             PMOUN(INCEXI+1)*FOS + PMCDH(INCEX2+1)*FSO
                                                                              EPH5 142
                                                                              EPHE 153
      INCEX=IDINT((CAY-DAYI)*0.25CO)
                                                                              EPHE 150
      DAY1= DAY1+4+OLC#OFLOAT(INDEX)
      S=(LAY-DAY19+C.25D0
                                                                              EPHS 165
      F0S=1.000-S
                                                                              EPHE 168
      FS2=F2(S)
                                                                              EPHE 167
```

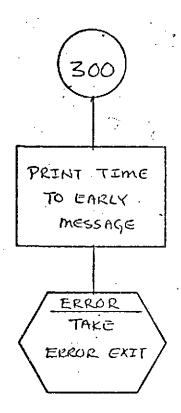
```
EPHE 168
      F2S=F2(F0S)
                                                                              EPHE 159
     . F45=F4(F05,F25)
                                                                              EPHE 170
      FS4=F4(5,F52)
                                                                              EPHE 171
       INDEX==(K-1)*125+INDEX*9
       INDEXO-INDEXU+S
                                                                              EPHE
                                                                                   172
C ... SUN & PLANETS (VENUS, MARS, JUPITER, SATURN)
                                                                              EPHE
                                                                                   173
      DO 100 J=1.NBCEY
                                                                              SPHE 174
       INDEXUESAU
                                                                              CPHE 175
       J27=J*27-27
                                                                              UPHE -176
       INDEX3=1HDEX3+J27
                                                                              EPHE
                                                                                   177
       INDEX4=INUEX0+J27
                                                                              EPHE
                                                                                   179
                                                                              EPHE
                                                                                   179
      DO 100 I=1.3
                                                                              EPHE
       13=1+3-3
       INDEX1=INDEX3+13
                                                                              EPHE
                                                                                   181
                                                                              EPHE
                                                                                   132
       INDEX2=INDEX4+13
  100 A0(INCEXO+1)=SUN(INCEX1+3)*F45 + SUN(INCEX2+3)*F54 +
                                                                              EPHE
                                                                                   183
                                                                              EPHE 134
          SUN(1NU=X1+2)*F2S + SUN(INDEX2+2)*F52 +
          JUN( INDEX1+1) *FOS + SUN( INDEX2+1 ) *FSO
                                                                              EPHE 135
C CONVERT SUN TO GLECENTRIC
                                                                              EPHE 136
      A0(5)=A0(5)+FACTOR*A0(1)
                                                                              SPHE 137
                                                                              EPHE 138
      AO(6)=AU(5)+FACTOF+AU(2)
                                                                              EPHE 139
      A0(7) = A0(7) + FACTOR * A0(3)
                                                                              EPHE 170
       IF(NUCDY.LT.2) GO TO 110
                                                                              EPHE 191
C CONVERT PLANET TO GEOGENERIC
      EO 105 I=2. NJCCY
                                                                              EPHE 192
      11=1+4
                                                                              EPHE 193
      'AO(11+1)=A0(11+1)+A0(5)
                                                                              EPHE 194
      A0(11+2)=A0(11+2)+A0(6)
                                                                              SPHE 195
  105 AO(11+3)=AO(11+3)+AO(7)
                                                                              EPHE 196
  110 DO 120 I=1. IECEY.4
                                                                              EPHE 197
      L= I+3
                                                                              EPHE 198
      AO(L) = AO(1) * AC(I) + AO(I+1) * AO(I+1) + AC(I+2) * AO(I+2)
                                                                              EPHE 199
      AO(L)=DSORT(AC(L))
                                                                              EPHE 200
      LI=L-1
                                                                              EPHF 201
  DO 120 J=1.L1
                                                                              EPHE 202
  120 A0(J)=A0(J)/A0(L)
                                                                              EPHE 203
      CAYFRV=JAY
                                                                              EPHE 204
      RETURN
                                                                              EPHE 205
C NO DATA AVAILABLE THIS LATE
                                                                              EPHE 206
  200 WRITE (6:1000) IYYO (K), IHM (K), SEC (K)
                                                                              EPHE 207
       CALL ERROR(7,EXY)
                                                                              EPHE 208
C NO CATA AVAILABLE THIS EARLY
                                                                              EPHE 209
  300 WRITE (6.2000) IYMD (N). IHM (N). SEC(N)
                                                                              EPHE 210
      CALL ERROR (7.04Y)
                                                                              EPHE 211
 1000 FORMAT( 1PROGRAM TERMINATED 1/ 0INSUFFICIENT EPHEMERIS DATA 1/
                                                                              EPHE 212
     1
              'OLAST CATA POINT'.18.16.F8.E/)
                                                                              EPHE 213
 2000 FORMAT( 'IPROGRAM TERMINATED '/' OINSUFFICIENT EPHEMERIS DATA '/
                                                                              EPHE 214
                                                                              EPHE 215
              'OFIRST DATA POINT', IE, I6,F3,5/)
      STOP
                                                                              EPHE 216
      END
                                                                              EPHE: 217
```











EQN

DESCRIPTION

EQN is a real function whose value is the equation of the equinoxes (nutation in right ascension). EQN also returns the nutation in longitude, the nutation in obliquity, and the true obliquity of date.

Multiple angle formulae have been used to reduce the massive number of trigonometric evaluations in Woolard's solution. NAME

EQN

PURPOSE

COMPUTES NUTATION IN LONGITUDE, NUTATION IN OBLIQUITY, TRUE COLIQUITY OF DATE, AND NUTATION IN RIGHT ASCENSION (EQUATION OF THE EQUINOX)

CALLING SEQUENCE EQN(DJ, DPS1, DE, E)

SYMBOL TYPE CESCRIPTION UΡ INPUT - JULIAN DATE DUTPUT - NUTATION IN LONGITUDE - RADIANS DPSI DΡ OUTPUT - NUTATION IN COLIQUITY - RADIANS DE 0P OUTPUT - TRUE OBLIQUITY - RADIANS E DΡ DUTPUT - NUTATION IN RIGHT ASCENSION - RADIANS OP (EQUATION OF THE EQUINOX)

SUBROUTINES USED NONE

COMMON BLOCKS

MONE

INPUT FILES

NONE

REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR/

CUTPUT FILES

HONE

RESTRICTIONS

ALL PERIODIC TERMS IN WOOLARD'S THEORY WITH COEFFICIENTS LESS THAN .001 SECONDS OF ARC HAVE EEEN NEGLECTED. ALL SECULAR PORTIONS OF THE COEFFICIENTS HAVE BEEN NEGLECTED WHENEVER THE SECULAR COEFFICIENTS ARE LESS THAN .001 SECONDS CF ARC.

REFERENCES

THE FORMULATION BY EDGAR W. WOOLARD MAY BE FOUND IN 4 PUBLICATIONS +

- 1. ASTRONOMICAL PAPERS PREPARED FOR THE USE OF AMERICAN EPHEMERIS AND NAUTICAL ALMANAC VOLUME 15. PART 1. PAGE 153 (THEORY OF THE ROTATION OF THE EARTH AROUND ITS CENTER OF MASS BY EDGAS W. WOOLARD)
- . 2. EXPLANATORY SUFPLEMENT TO THE ASTRONOMICAL EPHEMERIS AND THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC PAGES 44 AND 45
 - 3. IMPROVED LUNAR EPHEMERIS 1952-1959 A JOINT SUPPLEMENT TO THE AMERICAN EPHEMERIS AND THE (BRITISH) NAUTICAL ALMANAC PAGES IX AND X
- . 4. ASTRONCMICAL JOURNAL. 1953 FEBRUARY. VOL. 58. NO. 1. PAGES 1-3 (A REDEVELOPMENT OF THE

THEORY OF NUTATION - BY EDGAR W. WOLLARD)

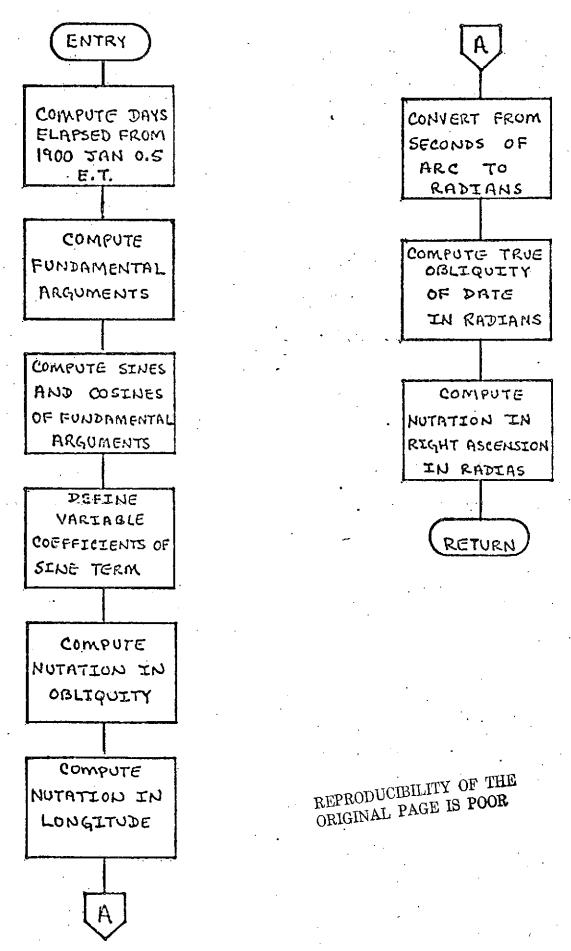
GEODYN SYSTEMS DESCRIPTION - SEC. 2.3.6 6 2.3.6.2 VOLUME 1 - GEODYN DOCLMENTATION

*EXPLANATORY SUPPLEMENT TO THE AMERICAN EPHEMERIS & NAUTICAL ALMANAC", PP. 44-45,98

```
EON
                                                                                   67
      FUNCTION EUN(D., DPSI, DE, E)
                                                                             EON
                                                                                   5 E
      DOUBLE PRECISION DU.D.CO.CI.DPSI.DE.E
      DIMENSIUM SCF (34), S(34), CCF (19), C(19), FARG (5), CO(5), C1(5), C2(5),
                                                                            EQN
                                                                                   69
                                                                             EON
                                                                                   70
                 C3(5)
                                                                                   71
                                                                            EON
      DATA CO/+5.158C00345745D0.
                                     +6.257 E83530497D0.
                           +0.196365054867DC. +6.121523942607DO.
                                                                             EQN
                                                                                   72
     1
                           +4.5236015148520 C/ - -- - - -
                                                                             EON
                                                                                   73
                                                                             EON
                                                                                   74
      DATA C1/+0.228(27134939576DC.+0.017201969766646D0.
                           +0.23039572323537200.+0.212763711675140D0.
                                                                            EON
                                                                                   75
                                                                             EON
                                                                                   76
                           -0.000924220294225D0/
                                                                             EQN
                                                                                   77
      DATA C2/+0.12C25169E-12.-0.00196240E-12.-0.04200996E-12
                                                                             EQN
                                                                                   78
                          .-0.01378819E-12.40.02718291E-12/
                                                                             EQN
                                                                                   79
      DATA C3/+5.153676E-21,-1.193948E-21,-0.119395E-21.
                                                                             EON
                                                                                   80
                           +0.676571E-21.+0.7957655-21/
                                                                             FON
                                                                                   81
C DEFINE CUNSTANTS (CEFFICIENTS OF SINE AND COSINE TERMS
                                                                             FON
                                                                                   32
      DATA SCF/0. -- 1.2725.+0.2083.-0.2037.+0.1261.+0.0675.
                                                                                   83
                             -0.0497,-0.0342,-0.0261,+0.0214,-0.0149.
                                                                             ECN
     1
                                                                             FON
                                                                                   94
     2
                             +0.0124, + 0.011 A.+0. 3060, +3.0055, -0.0057.
                                                                             EÇN
                                                                                   άΞ
                             -Ó.0052.+0.004 E.+0.0045.-0.0044.-0.0032.
     3
                             +0.0028.+0.0026.-0.0026.+0.0025.-0.0021.
                                                                             EUN
                                                                                   215
                                                                             EQN
                             +0.0019.+0.0016.-0.0015.-0.0015.+0.0014.
                                                                                   8.7
                             -0.0013,-C.001C,+0.0010/
                                                                             FON
                                                                                   83
       DATA CCF/+9.21C0.+0.5522.-0.09C4.+0.0886.+0.0216.-
                                                                             EON
                                                                                   80
                             +0.0183,+0.0113,-0.0093,-0.0066,-0.0050
                                                                             ECN
     ī
                                                                                   50
                             -0.0031.+0.003C.-0.0024.+0.0023.+0.0022.
                                                                             EQN
                                                                                   21
     2
                                                                             ECN
                             +0.0014.-0.0011.+0.0011.-0.0010/
                                                                                   92
     3
                                                                             EON
                                                                                   93
       REAL#8 DMOD ARGMOD DTWOP I
                                                                             EQN
                                                                                   94
       CATA DIWUPI/3.28318530717958600/
C COMPUTE D = NUMBER OF DAYS ELAPSED FROM 1900 JANUARY 0.5 DAYS
                                                                             ECN
C EPHEMERIS TIME
                                                                             EON
                                                                                   96
                                                                                   97
       D=DJ-2415020.CC
                                                                             EON
                                                                             EON
                                                                                   98
       02=0+0
                                                                             EQN
                                                                                   90
       D3=C+D2
C COMPUTE FUNDAMENTAL ARGUMENTS AND FEDUCE BY MODULUS 2 P.F.
                                                                             EON
                                                                                  100
: C FARG(1) = MEAN ANCHALY - MOON
                                                                             EON
                                                                                  101
C FARG(2) = MEAN ANCHALY - SUN
                                                                             EON
                                                                                  102
C FARG(3) = MEAN ARGUMENT OF LATITUDE - MCON
                                                                             FON
                                                                                  103
C FARG(4) = MEAN ELUNGATION OF MUCH FROM SUN
                                                                             FON
                                                                                  104
C FARG(5) = LUNGITUDE OF MEAN ASCENDING NODE - MOON
                                                                             FON
                                                                                  105
                                                                             EQN
       DO 1 N=1+5
                                                                                  106
       ARGHOD=CU(N)+C1(N)*D+DBLE(C2(N)*D2)+DBLE(C3(N)*D3)
                                                                             EON
                                                                                  107
     1 FARE(N)=DMUL(ARGMOD.DTWOPI)
                                                                             EON
                                                                                  108
COMPUTE SINES AND COSINES OF FUNDAMENTAL ARGUMENTS AND THE
                                                                             EON
                                                                                  109
C COMBINATION OF THE FUNDAMENTAL ARGUMENTS
                                                                             EON
                                                                                  110
       S(1) = SIN(FARG(5))
                                                                             EQN
                                                                                  111
```

```
C(1) # COS(FARG(5))
                                                                         HOE
, S(3) = 2.0*5(1)*C(1)
                                                                          HOE
                                                                               113
                                                                          EON
                                                                               110
 C(3) = C(1)**2-S(1)**2
                                                                          EQN
                                                                               115
       = SIN(FARC(3))
 CF
       = CUS(FARC(3))
                                                                          EON
                                                                               110
 5(25)= 2.0*SF*CF
                                                                          EON
                                                                               117
 C2F .# CF#$2-SF##2
                                                                          EON
      # SIN(FARC(4))
                                                                          EQN
                                                                               119
                                                                          EO:t
                                                                               120
 CD:
     = COS(FARC(4))
 S(14) = 2.0*50*CD
                                                                          EQN
                                                                               121
 C2D* = CD**2-8C**2
                                                                          HOB
                                                                               122
                                                                          EON
                                                                               123
 $(4) = $(251#C(31+C2F
                          *S(3)
 C(4) = C2F *C(3)-S(25)*S(3)
                                                                          HOB
                                                                               124
                                                                               125
 AL = S(4) #C20
                                                                          EON
                                                                          EQN
                                                                               126
-AL1
     = C(4) %S(14)
     = S(4)*S(14)
                                                                          HOE
                                                                               127
 AL2
 AL3 = C(4) *C20
                                                                          EQN, 128
 5(2) = AL -AL1
                                                                          EON
                                                                               129
 C(2) = AL3+AL2
                                                                          EQN
                                                                               130
 S(21)= AL +AL1
                                                                          EON
                                                                               131
                                                                          EQV
 C(1e) = AL3-AL2
                                                                               132
 S(E) = SIN(FARG(2))
                                                                          HOB
                                                                               132
 CL1 = CUS(FARG(2))
                                                                          ECN
                                                                               134
 S(26)= 2.0*S(5)*CL1
                                                                          EON
                                                                               135
 C2L1 = CL1**2-5(5)**2
                                                                          EGN
                                                                               136
 S(6) = SIN(FARG(1))
                                                                        EQN
                                                                               137
      = COS(FAFG(1))
                                                                          EQN
                                                                               13ċ
 3(22)= 2.045(6)*CL
                                                                          EGN
                                                                               139
 C2L = CL **2 - S(6) **2
                                                                          Eati
 S(8) = S(25)*C(1)*C2F *S(1)
                                                                          EON
C(6) = C2F *** C(1) - S(25) * S(1)
                                                                          EON
      = 5(2) +CL1
                                                                          EON
 BE1
      = C(2)*S(5)
                                                                          EON
                                                                               104
 BE 2
      = S(2)*S(E)
                                                                          EQN
                                                                               145
 863
      = C(2) \times CL1
                                                                          ECN
                                                                               166
 $(7) = BE +621
                                                                          EON
                                                                               107
 C(5) = 663-662
                                                                          EON
                                                                               148
 $(10) = BE -EE1
                                                                          EGN
                                                                               145
 C(8) = BE3+882
                                                                          EQN
      = S(4) + CL
 ĒΑ
                                                                          ECH
 GA4
      = C(4) + 5(6)
                                                                          EQN
                                                                               152
 GA2
      = 5(4) #5(6)
                                                                          EQN
                                                                               153
 GAB
      = C(4)#CL
                                                                          EQN
                                                                               154
 $(9) = GA +GA1
                                                                          EON
                                                                               155
 C(7) = GA3-GA2
                                                                          110E
                                                                               156
 $(12) = GA -GA1
                                                                          EQN
 C(10) = GA3+GA2
                                                                          EON
 $(11)= $(6) \c20-CL \ *5(14)
                                                                          EON
                                                                               159
     = CL *C2C+S(6)*S(14)
                                                                          ECN
 5(12)= S(b) *C2L-C(6) *S(14)
                                                                          EON
                                                                               151
 C(9) = C(6) *C2C+S(8)*S(14)
                                                                          EON
                                                                               162
      = S(1) *CL
 DΕ
                                 REPRODUCIBILITY OF THE
                                                                          EQN
                                                                               153
 DE 1
     = C(1)+5(c)
                                                                          EQN
                                                                               104
                                 ORIGINAL PAGE IS POOR
 DE2 = $(1) + $(t)
                                                                          EON
                                                                               165
 CE3 = C(1) *CL
                                                                          ECN
                                                                               165
 5(15) = DE +DE1
                                                                          HOB
                                                                               167
```

```
168
      C(114= 0E3-0E2
                                                                              CON
    5(1() = 00 -Del
                                                                              1103
                                                                                    170
      C(12) = DE3 + DL2
                                                                              ECN
      S(17) = 5(21) * (L -C()() * S(6)
                                                                              FON
                                                                                    171
      C(1:)= C(1:) CL +S(21)*S(6)
                                                                              EON
                                                                                    172
      $(12)= $(a) *C2L-C(6) *$(22)
                                                                              EQN
                                                                                    173
                                                                              EON
                                                                                    174
      C(12) = C(6) +C2L+S(8) +S(22)
                                                                              EQN
                                                                                    175
      $(19)= S(22)#C2D-C2L #S(14)
                                                                              EQN
                                                                                    176
           = 5(€)*CL
      ŒΡ
      EP1
                                                                              EGN
                                                                                    177
           = C(6) «S(6)
      EP2 = $(3) +$(6)
                                                                              ECN
                                                                                    178
                                                                              EON
      EP3 = C(61#CL
                                                                                    170
                                                                              EQN
                                                                                    180
      5(20) = EP +EP1
      C(14) = EP3-EP2
                                                                              EON
                                                                                    131
                                                                              EON
                                                                                    192
      $(27) = EP -EPI
      C(19)=EP3+EF2
                                                                              EON
                                                                                    183
                                                                              EON
                                                                                    134
      S(23) = S(2) *CL + C(2) *S(6)
      C(17) = C(2) *CL -S(2) *S(6)
                                                                              EON
                                                                                    135
      S(24)= 5(4) +C2L +C(4) +S(22)
                                                                              EON
      C(1c) = C(4) * C2L - S(4) * S(22)
                                                                              EON
      $(2c) = $(25) + (25 - $(14) + C2F
                                                                              ECN
      S(25)= 5(2) *C2L1+C(2) *S(28)
                                                                              ECN
                                                                                    109
          = S(1) #CL1
                                                                              HOB
     -ZE1 = C(1) \mp S(E)
                                                                              EON
                                                                                    191
      S(33) = ZE - ZE1
                                                                              EQN
                                                                                    192
      S(30) = ZE+ZE1
                                                                              ECN
                                                                                    193
      AMU = S(1)*CT
                                                                              EON
                                                                                    124
     .AMUI = C(1)*S(11)
                                                                              EGN
                                                                                    195
      S(E1) = AMU-AMUI
                                                                              EON
                                                                                    196
    LUMA+UMA = 155,5
                                                                             . EGN
                                                                                    197
      5(34)= S(22)+C2F-C2L*S(25)
                                                                              EUN
                                                                                    190
C DEFINE VANIABLE COEFFICIENT OF SINE TERM
                                                                                    109
                                                                              EON
      SCF(1)= -17.2327 - .4755646EE-6*D
                                                                              ECN
                                                                                    20 C
C COMPUTE NUTATION IN LONGITUDE BY SUMMING PRODUCTS OF SINE
                                                                              EGN
                                                                                    20 I
C COEFFICIENTS WITH THEIR RESPECTIVE SINE TERMS
                                                                              EON
                                                                                    202
C CMPUTE NUTATION IN DELIGUITY BY SUMMING PRODUCTS OF COSINE
                                                                              ECN
                                                                                    203
C COEFFICIENTS WITH THEIR RESPECTIVE COSINE TERMS :
                                                                              ECN
                                                                                    204
      DPS I= 0
                                                                              EON
                                                                                    205
      CE =0
                                                                              EON
                                                                                    206
      DO 3 N=1.19
                                                                              EQN
                                                                                    207
      DPSI=CPSI+SCF(N)*S(N)
                                                                              EQN
                                                                                    206
    3 DE =DE +CCF(N) *C(N)
                                                                              ECN
                                                                                    209
      DO 4 N=20.34
                                                                              EON
                                                                                    210
    4 DPSI=CPSI+SCF(N) #S(N)
                                                                              EQN
                                                                                    211
C CONVERT FROM SECUNCS OF ARC TO RADIANS
                                                                              EGN
                                                                                    212
      DPSI=CPSI # . 484 E13680-05
                                                                              EON
                                                                                    213
      DE=D2*.46461366D-05
                                                                              EON
                                                                                    210
C CEMPUTE THUE OBLIGHTY OF DATE IN RACIANS
                                                                              EQN
                                                                                    215
      E=0.40931976UC-6.217959D-9*D-.021441D-15*D2+.100037D-21*D3+DE
                                                                              EUN
                                                                                    216
C COMPUTE NUTATION IN RIGHT ASCENSION (EQUATION OF THE EQUINOXES)
                                                                              EQN
                                                                                    217
C IN RADIANS
                                                                              EQN ;
                                                                                   218
      EQN=DPSI + JCCS(E)
                                                                              EON
                                                                                    21°
      RETURN
                                                                              EON
                                                                                    550
      ENC
                                                                              EON
                                                                                    221
```



EQUATR

DESCRIPTION

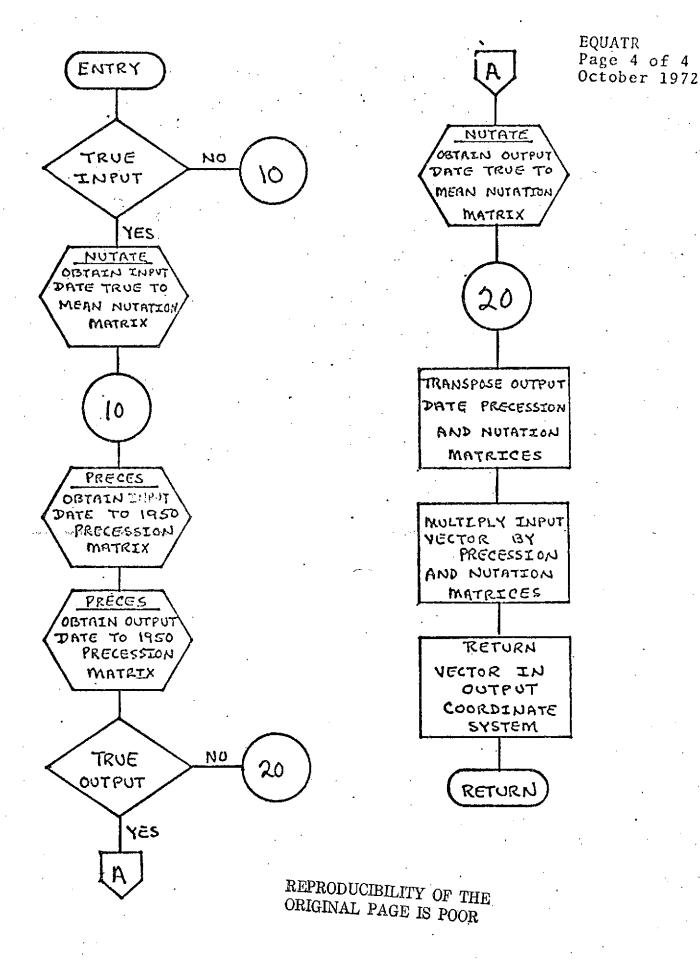
Subroutine EQUATR rotates a vector from mean or true equator and equinox of one epoch to mean or true equator and equinox of another epoch.

This routine invokes subroutine PRECES and NUTATE to generate the requisite rotation matrices. Note that the precession matrix is to precess to the given epoch from the mean equator and equinox of 1950.0; the nutation matrix rotates the vector from mean to true equator and equinox of date. Hence, the last two of the possible four rotation matrices generated must be inverted.

NAME	EQUATR
PURPOSE	TO RETATE VECTOR FROM MEAN OR TRUE EQUATOR AND EQUINOX OF ONE EPOCH TO MEAN OR TRUE EQUATOR AND EQUINOX OF ANOTHER EPOCH
CALLING SEQUENCE	(ALL EQUATR(X,DIN,TIN,Y,DOUT,TOUT)
SYMEOL TYPE	CESCRIPTION
X DP 1	INPUT - INPUT VECTOR
DIN UP	INPUT - DAYS FROM JAN 0.0 OF REFERENCE YEAR FOR INPUT VECTOR
TIN L	INPUT - TYPES OF INPUT: •TRUE. = TRUE COORDINATE SYSTEM •FALSE. = MEAN COORDINATE SYSTEM
Y DP	CUTPUT - OUTPUT VECTOR
DOUT OP	CUTPUT - DAYS FROM JAN 0.0 OF REFERENCE YEAR FOR OUTPUT VECTOR
TUUT L	CUTFUT - TYPES OF DUTFUT: A. TRUE. = TRUE COORDINATE SYSTEM •FALSE. = MEAN COORDINATE SYSTEM
. SUBROUTINES USED	NUTATE PRECES
COMMON ELECKS	REPRODUCIBILITY OF THE
INPUT FILES	ORIGINAL PAGE IS POOR
OUTPUT FILES	NCNE
REFERENCES	GEDDYN SYSTEMS DESCRIPTION: NOLUME 1 - GECDYN DOCLMENTATION

SUGROUTINE EQUATR (X.DIN.TIN.Y.DOUT.TOUT)	EQUA	45
REAL#8 X(3).Y(3).NF(3,3,4).T(3).DIN.DOUT.TOMP	EQUA	34
LOGICAL TIN.ICLT	EQUA	47
k≈2	EQUA	48
IF(.NCT.TIN) 6C TO 10	EQUA	49
N=1	EQUA	50
C OBTAIN MATRIX TO NUTATE FROM TRUE TO MEAN OF INPUT CHOCH	EQUA	51
CALL NUTATE (DIN.NP(1.1.11)	EQUA	52
C COTAIN MATRIX TO PRECESS FROM INPUT EPOCH TO 1950	EOUA	5.3
10 CALL FRECES(31N,NP(1,1,2))	EQUA	5.4
C OBTAIN MATRIX TO PRECESS FROM OUTPUT EPECH TO 1950	AUDE	55

	CALL PRECES (DOLT .NP(1.1	.311			*	.**		EOUA	50
	N=3 .							EQUA	57
•	"IF (.NET . TOUT) CO TC 20			•	•			EQUA	58
	N=4			•				EOUA	59
C OB	TAIN MATRIX TO NUTATE FRO	M TRUE	TO MEAN	OF OUTP	UT EPOCH			EOUA	50
	CALL NUTATE (DULT, NP(1,1				×			EQUA	61
C TR.	ANSPOSE OUTPUT EFOCH PREC	ESSION	AND NUT	AM NGITA	TRICES			EQUA	52
20	DC 30.1=1.3			•			-	AUDZ	63
	Y(I)=X(I)							EQUA	66
	DC 30 J=1.3				i.			EQUA	0.5
	DO 30 K=3.N					.*		EQUA	· 6 6
	TEMP=KP(1.3.K)		•			•		EQUA	67
	.NP(I.J.K)=NP(J.I.K).	`						EQUA	6 F
30	NP(J, I, K) = TEME							EQUA	୍ଟେ
C RU	TATE INFUT VECTOR TO DÉTA	IN OUT	PUT VECT	DR				EQUA	70
	DO 60 K#N+N							EQUA	71
	CC 50 1=1.3		·			٠.		EQUA	72
	T(1)=Y(1)	•			•			EQUA	73
5Ó	Y(I)=0.00					•		EQUA.	74
	CC 60 I=1.3	•			•		• •	EQUA	75
,	DC 60 J=1.3				•		,	EQUA	76
60	U)T*(X, L, 1)9(1+(1)Y=(1)Y	}			•			EOUA	77
	RETURN			•	•			EQUA	79
	END							EQUA	7 0



NAME

ERROR

PURPOSE

TO PRINT GEODYN ERRUR MESSAGES AND PROVIDE ERRUR TERMINATION

CALLING SEQUENCE

CALL ERROR (NUMBER. A)

SYMBOL TYPE

CESCRIPTION

NUMBER L

ERROR TYPE CODE NUMBER AS FOLLOWS: NUMBER: ERROR TYPE

INVALID INPUT DRUITAL ELEMENTS

2 INVALID ADJUSTED ORBITAL ELEMENTS

INVALID CPTION CARD IN INPUT

NO TRACKING DATA FOUND IN DATA PERIOD

FEWER THAN & WEIGHTED OBSERVATIONS LEFT

6 NO CATA CARD TERMINATING INPUT CARDS

7 OTHER ERRORS - NO EXPLANATION PRINTED

¿ DUPLICATE STATISM IN TRACKING COMPLEMENT

S REQUEST FOR ADJUSTMENT OF A STATION WHICH IS NOT IN THE TRACKING COMPLEMENT

1C PRINT GEODYN SIGNATURE

11 I/O ERROR IN D.A. READ

12 GEOPCTENTIAL COSFFICIENTS OUT OF RANGE

13 & 14 ILLEGAL SURF CARD

INSUFFICIENT DENSITIES ADJUSTED RELATIVE
TO THE NUMBER OF CONSTRAINTS

DP

NAME OF INVALIC CPTION CARD IN A6 FURMAT OR THE STATION NUMBER IN ERRCR. NOTE THAT WHEN THIS VARIABLE IS USED AS A STATION NUMBER IT WUST BE AN INTEGER IN THE CALLING PROGRAM AND MUST START ON AN EVEN CORE LOCATION

SUBROUTINES USED NONE

COMMON ELLCKS

FERMSG

INTELK

INPUT FILES

NONE

DUTPUT FILLS

FRINTER

```
60
                                                                              ERRO
      SUBFOUTINE ERRCR(NUMBER, A)
                                                                              ERRC
                                                                                    61
      REAL*E DEGREE (2) / 6HDEGREE . SHOR DER / . A
                                                                                    62
                                                                              ERRO
      EQUIVALENCE (ISTA.E)
                                                                                     63
                                                                              ERRC
      CCMMUNIFERMSG/IMES (26)
                                                                                     64
                                                                              ERRO
      COMMON/INTBEK/CUM(1)2).STEPSW.DUM2(19)
                                                                                   . . . 65
                                                                              ERRO
      LUGICAL STEPSK
                                                                                     66
                                                                                     6?
                                                                              ERRO
C SELECT AND PRINT EFROR MESSAGE
                                                                                     65
      GO TU (10,20,30,40,50,60,100,80,90,110,120,130,140,140,150,160),
                                                                              ERRO
                                                                                     69
                                                                              ERRC
                                                                                     70
         RUMBER
                                                                              ERRO
C FATAL EFRORS - TERMINATE 'PROGRAM
                                                                                     71
                                                                              ERRO
   10 WRITE (6.500)
                                                                                     72
                                                                              ERRO
                                                                                     73
      GC 1C 100
                                                                              ERRD
   20 WRITE (6,510)
                                                                              ERRU
                                                                                     76
       [F(.NCT.STEPSW) WRITE(6,511)
                                                                                     75
                                                                              ERRO
      1F(STEPSW) WRITE(6.512)
                                                                                     76
                                                                              ERRO
       WRITE (6.513)
                                                                                     77
                                                                               ERRO
      GU TG 100
                                                                                     7 E
                                                                               ERRO
   30 WEITE (6,560) A
                                                                                     79
                                                                               ERRO
       GO TO 100
                                                                                     50
                                                                               ERRO
   40 WRITE (6:570)
                                                                               ERRO
                                                                                     81
       GD TO 100
                                                                                     82
   50 WELTE (6.580)
                                                                                     83
       GO TU 100
                                                                                     84
   %0" WRITE (6,590)
                                                                                     95
       GO TU 100
                                                                               ERRO
                                                                                     23
   90 WR.ITE (6,610) ISTA
                                                                                      87
  100 WRITE (6.99999)
                                                                                      88
       STCF 5xxx3
                                                                                      RO
 C NON-FATAL ERRORS - RETURN
                                                                                      90
    80 WRITE (6.630) ISTA
                                                                                      91
                                                                               ERRO
   110 WRITE(6,94999)
                                                                                      92
                                                                               ERRO
       RETURN
                                                                                      93
                                                                               ERRO
 C FATAL EFRORS - TERMINATE PROGRAM
                                                                               ERRO
                                                                                      94
   120 WRITE(5.620) ISTA. IMES
                                                                               ERRO
       GC 10 100
                                                                                ERRO
   130 J=KUMEER-11
                                                                                ERRO
       #RITE(6,630) DEGREE(J)
                                                                                ERRO
       CO TU 100
                                                                                ERRO
   140 WRITE (6,640) A
                                                                                ERRO 100
       GC TU 100
                                                                                ERRO 101
   150 WRITE (0.650)
                                                                                ERRO 102
        GC TU 100
                                                                                ERRO 103
   160 WRITE (6.660)
                                                                                ERRO 104
        GU TU, 100
   500 FORMAT(1H1.20x, PROGRAM TERMINATION DUE TO ILLEGAL INPUT!/
               1HO.15X. EXPLANATION: INPUT CARTESIAN EPOCH ELEMENTS ..
               *EQUIVALENT TO REPLETIAN ELEMENTS WITH AN ECCENTRICITY*/
       2
               1H . 20 X . GREATER THAN 1 . PLEASE CHECK INPUT ELEMENTS AND . ERRO 108
       3
               *EXAMINE INPUT DECKS FOR MISSING OR OUT OF ORDER CARDS. (7) ERRO 105
   510 FORMAT(1H1, 20X, * PREGRAM TERMINATION DUE TO INAPPROPRIATE INPUT. */ ERRC 110
               1HO.15X. EXPLANATION: ADJUSTED CARTESIAN EPOCH ELEMENTS *. ERRC 111
```

```
LUUIVALENT TO KEPLERTAN ELEMENTS WITH ECCENTRICITY
                                                                       ERRO 112
                                                                       ERRC 113
  2
           IH .20X. GREATER THAN 1. 1/1HC. 15X. PROBABLE CAUSES: 1/)
  3
                                                                       ERRO 110
511 FORMAT(1H .20x.11) POOR FIRST ITERATION ORBIT DUE TO POOR ..
           . STARTING ELEMENTS OF A STEE SIZE TOO LARGE FUR THE !/
                                                                       EFLO 112
                                                                        ERRG 116
           IH . 22X. INUMERICAL ORBIT INTEGRATION IN THE FIXED STEP 1.
   1
                                                                        ERRO 117
   2
           *MUDE: *)
                                                                        ERRO 110
$12 FORMAT(IN .20X+11) POOR FIRST ITERATION DRBIT DUE TO GOOR *,
   3
           *STARTING ELEMENTS OR INAPPROPRIATE ERROR BOUNDS.*)
                                                                        ERRO 115
513 FORMAT(IH .20x. 12) THE EXISTENCE OF WILD DATA POINTS WHICH WERE!.
                                                                       ERRO 120
                                                                        EPRO 121
           · NOT ECITED FROM THE SCLUTICH **/)
                                                                        EDRO 122
560 FORMAT(IH1, 20x, * PREGRAM TERMINATION DUE TO ILLEGAL INPUT */
   1
           1HO, 15x, *EXPLANATION: THE CARD *, A6, * IN THE OPTION CARD *, EMRC 123
   1
           *GROUP IS TELEGAL * PLEASE CHECK INPUT FOR KEYPUNCH */.
                                                                        ERRC 125
   2
           IH .20x. ERRURS OR MISSING OR MISPLACED CARDS. 1/)
   3
                                                                        EPRC 126
570 FORMAT(1H1.20x. PREGRAM TERMINATION DUE TO INSUFFICIENT ".
           *UBSERVATIONS*/1H0,15%, *EXPLANATION: THE SETUP AND *.
                                                                        ERRG 127
   1
                                                                        ERRO 1120
           *OPERATION OF THIS RUN WERE SUCH THAT NO OBSERVATIONS **
           **ERE */1H .20X. AVAILABLE IN THE TIME PERIOD SPECIFIED *. ERRO 129
   2
           *FOR THE SATELLITE REQUESTED. PLEASE CHECK YOUR SETUP */
   3
                                                                        ERRC 130
   4
                                                                        ERRC 131
           1H .20x. DECK OR YAPE ASSIGNMENTS. 1/)
580 FORMAT(1H1, 20X, *PROGRAM TERMINATION DUE TO INSUFFICIENT WEIGHTED*, ERRO 132
            . DESERVATIONS. 1/
                                                                        ERRC 134
   1
           IHO.15%. EXPLANATION: INPUT ELEMENTS AND EDITING *.
           *CRITERIA WERE SUCH THAT FEWER THAN 8 OHSERVATIONS WERE */ ERRO 135
                                                                        ERRC 136
           IH .20X. LEFT IN THE SOLUTION !/)
                                                                        ERRO 137
590 FORMAT(141.20x. PROGRAM TERMINATION DUE TO MISSING DATA CARD /
       140.15%, 'EXPLANATION: PROGRAM ENCOUNTERED END UF FILE ON '.
                                                                        ERRO 138
                                                                        ERRC 139
  • 1
       **DATAS BEFORE READING DATA CARD TERMINATING LAST ARC. */
      1 140.15%, *PLEASE CHECK INPUT DECK FOR MISSING OR MISPLACED *.
                                                                        ERRO 140
                                                                        ERRO 161
        FDATA CARD OR MISPLACED FAD OF FILEMA)
                                                                        ERRO 162
600 FCFMAT(1H1, 20x, 'ILLEGAL STATION POSITION INPUT 1/1H0, 15x,
        *EXPLANATION: MORE THAN ONE STATION PUSITION CARD WAS INPUT *. ERRO 143
   1
        *FOR STATION*.15,1H./1HO.15X,*PROGRAM ACTION: THE DUPLICATE *, ERRO 144
        *OF THIS STATION HAS BEEN REMOVED FROM THE TRACKING COMPLEMENT 'ERRO 145
    3
        *USED. */IHC.15%. PROGRAM EXECUTION WILL BE CONTINUED. */)
                                                                         ERRC 147
    5
610 FCRMAT(IH1, 20%, PREGRAM TERMINATION DUE TO INSUFFICIENT *,
                                                                         ERRO 145
        *A PRIURI INFORMATION. */140.15%, *EXPLANATION: THE ADJUSTMENT*, EPRG 145
    1
        * OF STATION*, IE, ! HAS BEEN REQUESTED, !/16X, ! BUT NO A PRIORI*, EPRO
    2
                                                                         EPRC 151
        * POSITION IS AVAILABLE FOR THIS STATION. */1
    3
 620 FCRMAT(1H1, 23x, *EXECUTION TERMINATING DUE READ ERROR ON RANDOM*,
                                                                         ERRC 152
        ! ACCESS FILE : 13/1H0.15x. 'ERROR EUFFER IS!//15X.Z3.I6.20A4/
                                                                         ERRO 153
    1
                                                                        . ERRO 154
        16x,4(1x,ZE)/}
 630 FCFFAT(1H1.20X. EXECUTION TERMINATING DUE TO INPUT ERROR //
                                                                         EFRC 155
        1HO.15x. 'EXPLANATION: THE SETUP OF THIS RUN IS SUCH THAT THE *.ERRC
        *ESTIMATION OF * /20%. * GEOPCIENTIAL COMFFICIENTS OF 1.47.
                                                                         ERRO 157
        GREATER THAN USED IN THE 1/20X. GEOPOTENTIAL EXPANSION HAS
                                                                         EPRC 158
                                                                         EFRO 159
         *BEEN RECUESTED. 1)
 640 FCRMAT (1H1:20x: PROGRAM TERMINATION DUE TO ILLEGAL INPUT*/
                                                                         ERRC 160
         1HU.15X, 'EXFLANATION: THE CARD ".A6. " IN THE OPTION CARD ".
                                                                         ERRO 161
         *GROUP IS MISSING A CONTINUATION. */ TH . 20X. *PLEASE CHECK *.
                                                                         EPRO 162
                                                                         EPRC 163
         *INPUT FOR MISSING OR MISPLACED CARDS. *)
 650 FORMAT (1H1,20x, PROGRAM TERMINATION DUE TO ILLEGAL INPUT*/
                                                                          ERRO 164
         1HO.15X. *EXPLANATION: AN ILLEGAL SURFACE DENSITY INCREMENT *.
                                                                          ERRC 165
         *SIZL WAS SPECIFIED. */IH .. 20X. *PLEASE CHECK INPUT FOR 1.
                                                                          ERRO 166
                                                                          ERRC 167
         *KEYPUNCH EFRORS. 1)
```

```
660 FORMATCHA, ZUX . EXECUTION TERMINATING DUE TO INAPPROPRIATE INPUT
                                                                            ERRU 168
         THU. 15X. LEXELARATION: THE SETUP OF THIS DECK IS SUCH THAT ..
                                                                             ERRO 169
         THE NUMBER OF SURFACE VEIX . DENSITY CONSTRAINT EQUATIONS ..
                                                                             ERRO 170
                                                                             ERRC 171
          IS GREATER THAN OR FOUAL TO 1/21 X.
                                                                             ERRC 172
          "THE NUMBER OF ADJUSTED SURFACE CENSITIES. "/)
                                                                             EPRC 173
99999 FURFAT(52X, 2H***/51X, 5(1H*)/50X, 2H**, 2X, 2H**/50X, 2H**, 2X, 2H**,
                   /5CX+2H#*+2X+2H**+2X+2H** /50X+2H**+1X+2H*#+2X+3H*##, EPRC 174
        21X.3H***/DCX.4H****.1X.5(1H*).31X.3H***/51X.6(1H*).1X.2H**.30X.EPRC 175
            2H**/51X,3H*#*,4X,2H**,30X,2H**/50X,2H**,5X,2H*#,29X,2H**/
           49X+2H**,7X+2H**,29X,2H**/48X,2H**,3X,2H**,28X,2H**/47X,2H**,5FFC 177
          9X。2H**。ZX:4H***5X。4H****6X。4H****1X。3H***。3X。4H****6X。
           3H*****CX**CH****2X*AH*****/46X*2H***10X*1H**2X*6(1H*)*AX*2H***
                                                                             ERRC 179
            1x,3H***,5X,2H**,1X,4H****,6X,4H****,4X,2H**,3X,3H***,1X,
                                                                             ERRO 150
           6(1HF)/41X,3HF**,1X,2H**,10X,2H**,1X,3H***,3X,1H*,3X,2HF#,3X,
                                                                             ERRC
            2H## .4 X . 2H*# . 3X . 3H### . 5X . 2H## . 4X . 2H** . 5X . 4H#### .3X . 2H*#/
                                                                             FRED
          42X,6(1H+),10X,2H**,3X,4H****,4X,2H**,4X,2H**,3X,2H**,4X,2H**, ERRO
            OX.2H++.3%.2H++.6X.2H++.5X.2H++/43X.4H+++.8X.2H+*.3X.2H++.6X2PAC
           2HK4.5X.2F44.2X.2H**.5X.2H**.5X.2H**.4X.2H**.5X.2H**.5X.2H**/ EFRO
            43X, 5H ## * * # , 6X, 2H # * , 3X, 3H * * * , 6 X, 2H # * , 4X, 2H * * , 3X, 2H * * , 4X,
                                                                             ERRU 186
            3H***.4X.2H**.4X.3H***.5X.2H**.5X.2H**/42X.2H**.2X.9(1H*).5XERRC
           6 (1H*), 2X, 2H**, 3X, 2H**, 4X, 2H**, 7X, 5(1H*), 3X, 2H**, 3X, 3H*** , 5X, ERRC
          ZHF#+5X+2H#+/41X+3H##*+4X+6(1H#)+7X+4H+#*#+4X+5(1H#)+6X+6(1H#)+5DFC
           1X,2H*+,4X,4H***,1X,2H++,4X,3H***,4X,4(1H*)/97X,2H**/97X,
                                                                             ERRC 190
                                                                             ERRO 191
          2H4#/41X.57(1H#)/40X.57(1H#))
                                                                              ER90 192
       END
```

ESTIM

DESCRIPTION

ESTIM is the Bayesian least squares numerical parameter estimation subroutine designed specifically for the GEODYN system.

ESTIM has four types of calls, each performing a specific task. The tasks performed on each of the ESTIM calls are the following:

- 1) Initialization.
- 2) Formation of the estimation matrices.
- 3) Estimation of single arc parameters and, on the last inner iteration, computation of effects of single arc parameters on adjusted geodetic parameters.
- 4) Estimation of geopotential parameters.

NAME

ESTIM

ENTRY POINT

PURPOSE

ESTIM1

INITIAL IZATION

EST1M

TO ESTIMATE CORRECTION VECTOR TO STATE VECTOR USING METHOD OF BAYESIAN LEAST SQUARES

CALLING SEQUENCE CALL ESTIMI(SUM1.SUM2.DELTA.STPOS.STPOST.SIGSTA.

BBIAS.BIASD.BIASSG.ISTAND.ESTANO.LOC.

BIASNO.PARNOS.INDXCS.TDENO.TDSIG)

,		•
SYMBOL	TYPE,	DESCRIPTION
SUM1 (1)	9C	INPUT & DUTPUT - NORMAL MATRIX
SUM2 (1)	Do	INPUT & OUTPUT - RIGHT HAND SIDE OF NORMAL ENGLIANDS
DELTA	DP	OUTPUT - CORRECTION VECTOR
STP05 {3-1-}	0P	INPUT & OUTPUT - CUPPENT STATION COOPDINATES
STP0S0 (3.1)	Do	INPUT - A PRIORI STATION COORDINATES
SIGSTA (3,3,1)	R ,	INPUT - STATION COORDINATE VARIANCE/COVARIANCE MATRICES
EBIAS	Э¤	INPUT & OUTPUT - CURRENT DRAG. SOLAR RADIATION. BIAS. GEOPOTENTIAL & SURFACE DENSITY VALUES
BIASO	Db .	INPUT - A PRIDRI DRAG. SOLAR RADIATION. BIAS. AND GEOPOTENTIAL VALUES
BIASSG	DÞ	INPUT - DRAG. SOLAR PADIATION. BIAS. GEOPOTENTIAL AND SURFACE DENSITY VALUES
ISTANO	1+2	INPUT - STATION NUMBERS
ESTANO (1)	1#2	INPUT - MASTER STATION LOCATION INDICES
LOC (1)	1+2	SCRATCH
BIASNO (1)	1 + 2	INPUT - DRAG. SOLAR PADIATION, DIAS. GEOPOTENTIAL SECTION I NOITABLE VITENED EDAERUS DIA

•	(1)	1#2	тирут,		PARAMETE	R N	10MBERS			•	
•	1NDXCS (3.1)	I * 2	INPUT		INDICES COEFFICE			ED GE	OPOTENTIAL		
	TDENO	DP	INPUT	-	APRIORI	VAL	UES OF	SURF	ACE DENSITI	E S	
	TDS1G (1)	DP	INPUT		APRIORI	sto	GMAS OF	SUR≑	ACE DENSITI	ES .	
C	ALLING S	ESJENCE	CALL E	s	TIM(ITYPE	• 51	I GMA • ₹ Ē	\$10.4	PARTL)		
	SYMBOL	TYPE	DESCRI	P.	TION						
	ITYPE	I	INPUT	-	INDICATE PERFORMS		TYPE OF	DPER	SE OT POLTA	٠.	
	SIGMA	DP	INPUT	-	MEASURE	EN1	T STAND	C CRA	EVIATION		
	RESID	Dэ	INPUT	-	MEASUREM	ENT	r RESIO	UAL		•	
•	MPARTL	OP	INPUT	-	PARTIALS UNKNOWNS		" MEASU	REMEN	TS WITH RES	PECT TO	
ŞU	SROUT INC	S JSTED	CLEAR		PHTHE	7	24.	INV	NUMBR2	NUMBER	•
CO'	имом вьо	cks	AP AR AV PR IDR I		ĊELEV		CON	ουτ .	CPARAM	INITBK	
IN	OUT FILES	s ,	NONE					•			•
טס	TPUT FIL	ES	мом		*		•		REPRODUCI ORIGINAL I	ELLITY OF 'PAGE IS PO	THE
REI	FÈRENCES				SYSTEMS 1 - GEODY					TAGE 12 10()R

INDIT - PARAMETER NUMBERS

DADNOS

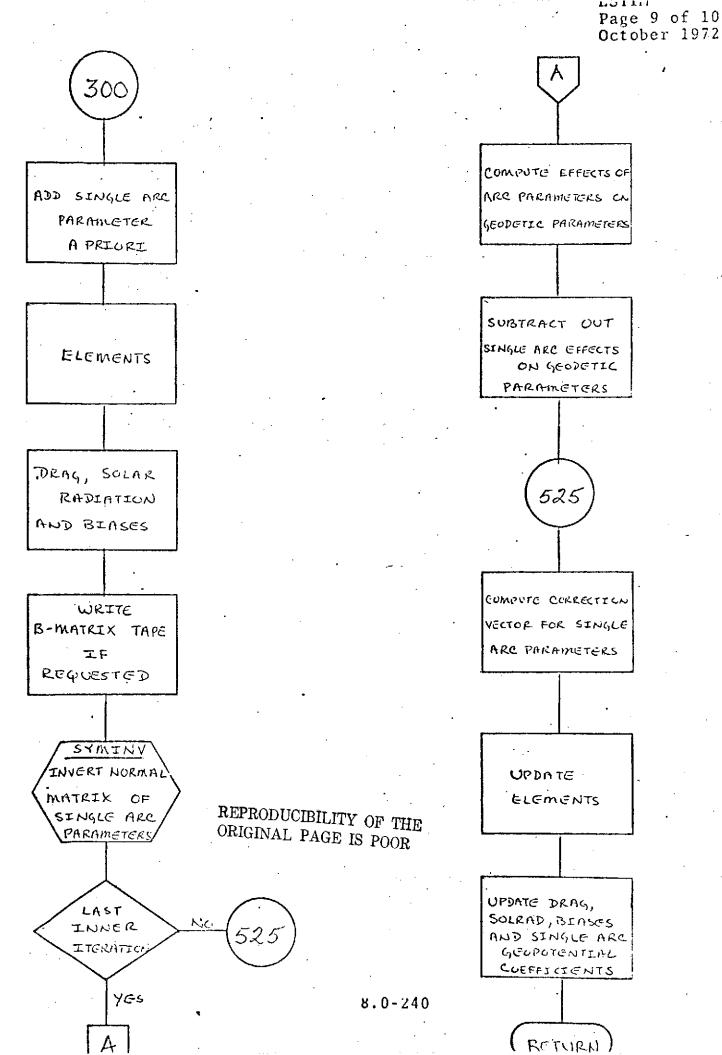
```
SUBROUTINE ESTIMICSUM 1. SUM2. DELTA. STPOS. STPOSO. SIGSTA. BRIAS. PIAST. FSTI
                                                                               9.8
   BIASSG. ISTANO.ESTAND.LOC.BIASNO.PARNOS.INDXCS.TDEND.TDSIG)
                                                                        CSTI
                                                                               99
IMPLICIT REAL*8 (A-H.C-Z)
                                                                        ESTI 100
LOGICAL LINNER. CHOGPR. SMAT
                                                                        ESTI 101
INTEGER PARMAX. ESTSTA. MATNO. SIMOAT
                                                                        FSTI 102
INTEGER#2 ISTAND.ESTAND.LDC.81ASND.PARNOS.INDXCS
                                                                        FSTI 107.
REAL SIGSTA, RMSTOT, VARCOV
                                                                        FSTI 104
DOUBLE PRECISION MEARTL
                                                                        FST1
                                                                              * (5
DIMENSION SUM1(1), SUM2(1), STPDS(3,1), STPDSO(3,1), SIGSTA(3,3,1),
                                                                        FSTI
                                                                              106
   931A3(1).8IAS0(1).PIASSG(1).ISTANO(1).FSTANO(1).LOC(1).
                                                                        EST!
   BIASNO(1), PARNOS(1), DELTA(1), MPARTL(1), INDXCS(3,1), TDFNO(1),
                                                                        FST[
   TOSIGCEL
                                                                        FSTI Tro
COMMON/APARAM/ INPAR. INPAR. INPAR I. NBIAS' ESTSTA. NSAT. NGPARC . NDRECL . NPARAM. ESTI 110
   NEBIAS . PARMAK
                                                                        FSTT 111
```

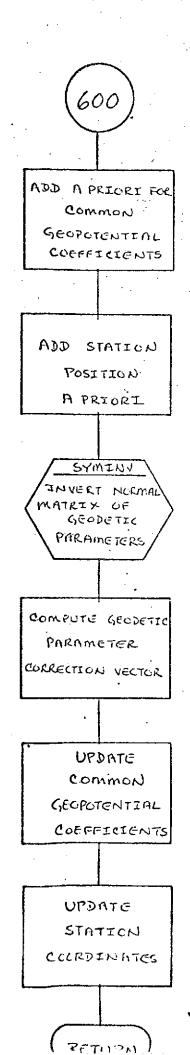
```
ESTI 112
      COMPONICELEMIELEMST(6.2).ORBELA(14).RMSTOT
                                                                             ESTI 113
      CCMMON/CONOUT/IGI(8).NEONMX.IG2(10)
                                                                             ESTI 114
      COMMON/CPARAM/NSTA.NMAST.NSTEST.NDIM.MBIAS.NGPC1.NGPC2.
                                                                             ESTI 115
         NGPC TM . NCSEST . CMP G PR . L IM1 . L IM2 . NDEN . NDE NST . NTI DST . NTI DEN .
                                                                             ESTI 116
         INNESW . NCCHST . NDCOAS
                                                                             FSTI 117
      COMMON/IN[TBK/IEPYMD(45), BMATNO, SIMDAT(11)
                                                                             ESTI 118
      CCMMON/PRIDRI/ELEGO(6.2).VARCOV(6.6.2).TITLE(30).DRAG(18)
                                                                             ESTI 119
      DATA NOFILE/O/
                                                                             ESTI 120.
      1NDXNO(T) = NDIM*(I-1) - (I*(I-1))/2
                                                                             FSTI 121
      RETURN
                                                                             ESTI 122
      ENTRY ESTIM(ITYPE, SIGNA, RESID: MPARTL)
                                                                             ESTI 123
C INITIALIZE
                                                                             EST1 124
      GO TO (100.200.300.600).TTYPE
                                                                             ESTI 125
  100 PARMAX=INPARI
                                                                              ESTI 126
      IF(NB [AS.GT.C) PARMAX=NEONMX+2
                                                                             ESTI 127
      ISTART=INPARI+1
                                                                             FST1 128
      II=LIMI
                                                                             FSTI 329
      CALL CLEAR (SUM 2, 2, 11)
                                                                             ESTI 130
     TI1=INDXNJ(II)+NDIM
                                                                             ESTI 131
      CALL CLEAR(SUM1.2.11)
                                                                              ESTI 133
      "LINNER=LIM2.GT.0.AND. (NMAST.GT.0.DR.NGPCDM.GT.C.DP.NTIDEN.GT.C)
                                                                             ESTI 133
      BMAT= . FALSE .
                                                                             ESTI 134
      IF(.NOT.LINNER) RETURN
                                                                             ESTI 1/35
      BMAT=BMATNO.GT .O
      IF (NYAST.GT.C) PARMAX =NEONMX+8
                                                                             ESTI 136
                                                                              ESTI 137
      IF(PARMAX.EQ.INPART) PARMAX=NEQNMX
      NST ART-NO IM-3*NM AST+1-NGP COM-NT IDEN
                                                                              ESTI 139
                                                                             ESTI 139
C FORM MOSMAL MATRIX
                                                                              ESTI 140
      RETURN
                                                                              ESTI 141
  200 WT=1.00/(SIGMA*SIGMA)
                                                                             FSTI 142
C SINGLE ARC FORCE MODEL PARAMETERS.
      IST =0
                                                                              ESTI 143
      DO 240 I=1. INPARI
                                                                              ESTI 144
      T=MPARTL( I ) * WT
                                                                              FSTI 145
      SUM2(I)=SUM2(I)+T*RES ID
                                                                              ESTI 146
      DO 235 J= 1.PARMAX
                                                                              ESTI 147
      I1=PARNOS(J)
                                                                              ESTI 148
      IF(11.E0.0) GO TO 235
                                                                              ESTI 149
      12= IST+ [1
                                                                              ESTI 150
      SUM1(I2)=SUM1(I2)+T&MPARTL(J)
                                                                              ESTI 151
  235 CONTINUE
                                                                              ESTI 152
  .240 IST=IST+NDIM-I
                                                                              ESTI 153
C PLASES AND GEODETIC PARAMETERS
                                                                              ESTI 154
      .IF(PARMAK.ED.INPARI) RETURN
                                                                              ESTI 155
      DO 250 I=ISTART.PAPMAX
                                                                              EST 1 156
      I1=PARNOS(I)
                                                                              ESTI 157
                                      REPRODUCIBILITY OF THE
      IF(I1.E0.0) GO TO 250
                                                                              ESTI 158
                                      ORIGINAL PAGE IS POOR
      T=MPARTL(1)*WT
                                                                              EST 1 159
      SUM2(11)=SUM2(11)+T*RESID
                                                                              ESTI 160
      DO 245 J=1.PARMAX
                                                                              FSTI :61
      12=PARNOS (J)
                                                                              FSTI 162
      IF(12.69.3) GO TO 245
                                                                              ESTI 163
      IF(12.LT.11) GO TO 242
                                                                              ESTI 1/4
      NCOLMI=II-1
                                                                              ESTI 165
      IST=NCOLM1*NOIM-(II*NCOLM1)/2+12
                                                                              ESTI 166
      GO TO 234
                                                                              ESTI 167
```

```
242 NCOLM1=[2-1
                                                                            ESTI 168
      IST=NCOLMI*NDIM-(I2*NCDLM1)/2 + I1
                                                                            ESTI 169
  244 SUM1(IST) = SUM1(IST)+T *MPARTL(J)
                                                                            ESTI 170
  245 CONTINUE
                                                                            EST1 171
  250 CONTINUE
                                                                            EST[ 172
C ADD SINGLE ARC PARAMETER A PRIORI
                                                                            ESTI 173
      RETURN
                                                                            EST1 174
C ELEMENTS
                                                                            ESTI 175
  300 IST=0
                                                                            ESTI 175
      DO 310 L=1.NSAT
                                                                            EST 1 177
      L1 =6*(L-1)
                                                                            ESTI 178
      DO 310 I=1.6
                                                                            ESTI 179
      11=L1+I
                                                                            FSTI 180
      DO 305 J≈1.6
                                                                            FSTI 181
  305 SUM2(11)=SUM2(11)+VAR CDV(1,J,C)*(ELEM0(J,C)-ELEMST(J,C))
                                                                            EST1 182
      DO 309 J=1.6
                                                                            EST1 183
      11=1ST+J+L1
                                                                            ESTI 184
  308 SUM1(I1) = SUM1(I1)+VAR COV(J. I.L)
                                                                            ESTI 185
  310 IST=IST+VDIM-I-L1
                                                                            ESTI 186
C DRAG. SCLAR RADIATION. AND BLASES
                                                                            ESTI 187
      NBS GP=M3 I AS+NGP ARC
                                                                            ESTI 188
      00 315 I=1.N9SGP
                                                                            ESTI 189
      (I)CMRAIB=II
                                                                            FSTI 190
     · IF(I1.E0.0) GO TO 315
                                                                            ESTI 191
      T=1.0 DC
                                                                            ESTI 192
      IF(I.LE.MBIAS) T=1.0D0/BIASSG(I)**2
                                                                            FSTT 193
      SUM2(11)=SUM2(11)+ (*(BIASO(1)-BBIAS(1))
                                                                            ESTI 194
      11=IN0xN0(11)+11
                                                                            ESTI 195
      SUM1(I1)=SUM1(I1)+T
                                                                            FSTI
                                                                                 196
  315 CONTINUE
                                                                            ESTI
C EN OPTION, WRITE NORMAL MATRIX
                                                                            FSTL
                                                                                 109
      IF(BMAT) CALL'BMYWRT(SUM1.SUM2.INDXCS.BIASN)(NGPC1).BAIASO(NGPC1). FSTI
                                                                                 197
         BIASSG(NGPC1).ESTAND.ISTAND.STPOS.NOFILE)
                                                                            ESTI 200
C INVERT NORMAL MATRIX OF SINGLE ARC PARAMETERS
                                                                            ESTI 201
      CALL SYMINV(SUMI, NDIM, NPARAM, DELTA)
                                                                            ESTI 202
C CN LAST INNER ITERATION COMPUTE EFFECTS OF ARC PARAMETERS ON
                                                                            ESTI 203
C GEODETIC PAPAMETERS
                                                                            ESTI 204
      IF(.NOT.LINNER) GD TO 525
                                                                            ESTI 205
      I1=INDXNO(NSTART)
                                                                            ESTI 205
      DO 500 I=NSTART, NO IM
                                                                            ESTI 207
      L1=0
                                                                            ESTI 208
      DO 450 L=1.NPARAM
                                    REPRODUCIBILITY OF THE
                                                                            ESTI :209
      DELTA(L)=0.000
                                                                            FSTI 210
                                    ORIGINAL PAGE IS POOR
      IST =J
                                                                            FSTI 211
      DO 400 J=1.L
                                                                            EST1 212
      J1=15T+L
                                                                            EST1 213
      J2=15T+1
                                                                            FST 1. 214
      DELTA(L)=DELTA(L)+SUM1(J1)*SUM1(J2)
                                                                            ESTI 215
  400 IST=1ST+V014-J
                                                                            ESTI 216
      IF (L.EO.NPARAM) GO TO 425
                                                                            ESTI 217
      LP1 =L+1
                                                                            ESTI 219
      DO 410 JELPI-NPARAM
                                                                            ESTI 219
      J1 = L1 + J
                                                                            FSTI 220
      1+T21=5t
                                                                             FST1 221
C SUBTRACT DUE SINGLE ARC EFFECTS DN GEODETIC PARAMETERS
                                                                            FST1 222
      DELTA(L)=DELTA(L)+SJM1(J1)*SUM1(J2)
                                                                             ESTI 223
```

```
ESTI 224
  410 IST=IST+NDIM~J
                                                                             ESTI 225
  425 SUM2(1)=SUM2(1)-SUM2(L)*DELTA(L)
                                                                             EST 1 226
      DO 440 K= [ NDIM
                                                                             ESTI 227
      K1=11+K
      K2=L1+K
                                                                             ESTI 228
  440 SUM1(K1)=SUM1(K1)+DEL TA(L)+SU41(K2)
                                                                             ESTI 229
  450 L1=L1+NDIM-L
                                                                             EST1 230
      J1 = I
                                                                             ESTI 231
      DO 495 J=1 NPARAM
                                                                             ESTI 222.
      SUM1(J1)=DELTA(J)
                                                                             ESTI 233
  495 J1=J1+N01 M-J
                                                                             FST1 234
  500 I1=I1+NDIM-I
                                                                             ESTI 235
C COMPUTE CORRECTION VECTOR FOR SINGLE ARC PARAMETERS
                                                                             ESTI 235
  525 IST =0
                                                                             ESTI 237
      L=6*NSAT
                                                                             FSTI 238
      90 550 1=1.NPARAM
                                                                             EST1 239
      DELTA(I)=0.0D0
                                                                             ESTI 240
      [1= [
                                                                             ESTI 241
     -- DO 540 J=1.I
                                                                             ESTI 242
      DELTA(I)=DELTA(I)+SUM1(II)*SUM2(J)
                                                                             ESTI 243
  540 .I1= 11+NDIM-J
                                                                             ESTI 244
      IF(I.EQ.NPARAM) GD TO 548
                                                                             ESTI 245
      TP1=1+1
                                                                             ESTI 245
      DO 545 J= IP1 NPARAM
                                                                             ESTI 247
      II=IST+J
                                                                             FSTI 248
C UPDATE ELEMETS
                                                                             ESTI 249
  545 DECFACET=OECTACET+SUMICTIF*SUM2(J)
                                                                             ESTI 250
  548 IF(I.LF.L) ELEMST(I.1)=ELEMST(I.1)+DELTA(I)
                                                                             ESTI 251
  550 IST=IST+NDIM-I
                                                                             ESTI 252
C UPDATE CRAG. SCLAR RADIATION, AND BIASES
                                                                             ESTI 253
      IF (NOARAM. EQ.L) RETURN
                                                                             ESTI 254
      00 560 I=1.NBSGP
                                                                             ESTI 255
      I1=BIASNO(I)
                                                                             EST 1 256
  560 IF(11.NE.0) BRIAS(1) = EBIAS(1)+DELTA(11)
                                                                             ESTI 257
C ADD GEOPOTENTIAL COEFFICIENT A PRIDRI
                                                                            FSTI 358
      RETURN
                                                                             EST1 259
  600 IF (NGPCOM.LE.0) GO TO 606
                                                                             EST 1 260
      T=1.000
                                                                             ESTI 261
      DO 635 I=NGPC1,NGPC2
                                                                             FST 1 262
      II=BIASNO(I)
                                                                             ESTI 263
      1F(11.EQ.0) GD TO 605
                                                                             ESTI 264
      $UM2(11)=SUM2(11)+ BIAS0(1)-BBIAS(1)
                                                                             EST 1. 265
      I1=[NDXN0(I1)+I1
                                                                             ESTI 266
      SUMI(I1) = SUMI(I1)+T
                                                                             FSTI
                                                                                  267
  605 CONTINUE
                                                                             EST U 268
C ADD STATION POSITION A PRIORI
                                  REPRODUCIBILITY OF THE
                                                                             FSTI
                                                                                  269
  605 IF(NTIDEN.LE.0) GD TO 750
                                                                             ESTI 270
                                  ORIGINAL PAGE IS POOR
      L1=NSTART+NGPCCM-1
                                                                             ESTI 271
      DO 725 I=1.NTIDEN
                                                                             ESTI 272
      T=1.000/TDSIG(1)**2
                                                                             ESTI 273
                                                                             EST 1 :274
      SUM2(11)=SUM2(11)+T*(TDENO(1)+BB1AS(1+NGPC2))
                                                                             ESTI 275
      II = INOXNO(II) + II
                                                                             ESTI 276
  725 SUM1(II)=SUM1(II)+T
                                                                             FSTI 277
  750 [F(NMAST. E0.0) GO TO 630
                                                                             ESTT 278
       11=NSTART + NGPCOM +VT I DEN
```

•				
•		IST=INDXYO(II)	ESTI 2	80
		L=0	ESTI 2	P 1
		DD 620 I=1.NMAST	ESTI 2	8.2
	60B	L=L+1	ESTI 2	E 3
		IF(NUMBR2(L.ESTAND.NSTEST).EQ.C) GO TO 608	ESTI 2	84
		DO 620 J=1.3	ESTI 2	25
		DO 610 K=1,3	EST 1 2	85
	610	SUM2(11)=SUM2(11)+SIGSTA(J,K,L))*(STOCOTS-(K,L))	FSTI 2	87
		12=15T+11	ESTI 2	EB
		DO 615 K=J.3	ESTI 2	89-
		SUM1(12)=SUM1(12)+SIGSTA(K.J)	ESTI 2	၈၅
	615	12=12+1	ESTI 2	91
		IST=IST+NDIM-II	EST! ?	02
	620	I1=I1+1	ESTI 2	
		IST=INDXNO(NST ART)	ESTI 2	
	050	II=IST+NSTART	ESTI 2	
c	TNU	ERT NORMAL MATRIX OF GEODETIC PARAMETERS	FSTI 2	
~.		12=3*NMAST+NGPCOM+NTICEN (ESTI ?	
		CALL SYMINV(SUMI(II), 12, 12, DELTA(NSTART))	ESTI 2	
•		12=1ST	ESTI 2	
		IST A=0	ESTI 3	
		DO 650 I=NSTART, NDIM	ESTI 3	-
		DELTA(1)=0+000	ESTI 3	
_	COM	PUTE GEODETIC PARAMETER CORPECTION VECTOR	FSTI ?	
~	•	II=I2+I	ESTI	
		DO 640 J=NSTART.1	ESTI 3	
		DELTA(I)=DELTA(I)+SUM1(II)*SUM2(J)	ESTI 3	• -
	640	T1=T1+304217	FST [3	
	040	IF(I.EQ.NOIM) GO TO 648	FSTI 3	
		1P1 = I + 1	ESTI 3	
		DO 645 J=IP1+NDIM	ESTI 3	
		11=1ST+J	ESTI 3	
	645	DELTA(I)=DELTA(I)+SUM1(II)*SUM2(J)	ESTI 3	
_		ATE GEOPOTENTIAL COEFFICIENTS	ESTI 3	_
_		II=I-NSTART+1-NGPCOM-NTIDEN	ESTI 3	-
	040	IF(I1.GT.9) GO TO 649	ESTI 3	
		11=NGPC1+1-NST ART	ESTI 3	
		BBIAS(II)=BBIAS(II)+DELTA(I)	ESTI 3	_
_	HDD	ATE STATION COORDINATES	ESTI 3	
•	QP-U	GD TO 650	ESTI 3	
	440	IF(MOD([[.3].NE.1) GD TO 40		_
	043	J1=0	EST1 3	
	. 34	ISTA=ISTA+1	ESTI 3	
	-	NOCON=NJMLOC(ISTA, EST AND, NSTEST, LOC)	FST[13	
		IF(NOCON-EQ.C) GO TO 30	PSTI 3	
	۸۸	J1=J1+1	FSTI 3	
	70	DD 50 J=1+NOCON	ESTI 3	
	•	J2=3*(LNC(J)-1)+J1	FSTI 3	
	6.7	STPOS(J2,1)=STPOS(J2,1)+DELTA([)	ESTI	
		IST=[ST+ND[M-[FSTI 3	
	- 0.50	RETURN	ESTI 7	_
		END	FSTI	
		with the state of	EST 1, 3	





DESCRIPTION

F evaluates the total acceleration of the satellite due to all of the forces present in the model.

F is primarily executive in nature, calling subroutines
for all effects except solar radiation pressure. F also
computes the partial derivatives of the acceleration due
to radiation pressure with respect to the satellite
reflectivity coefficient.

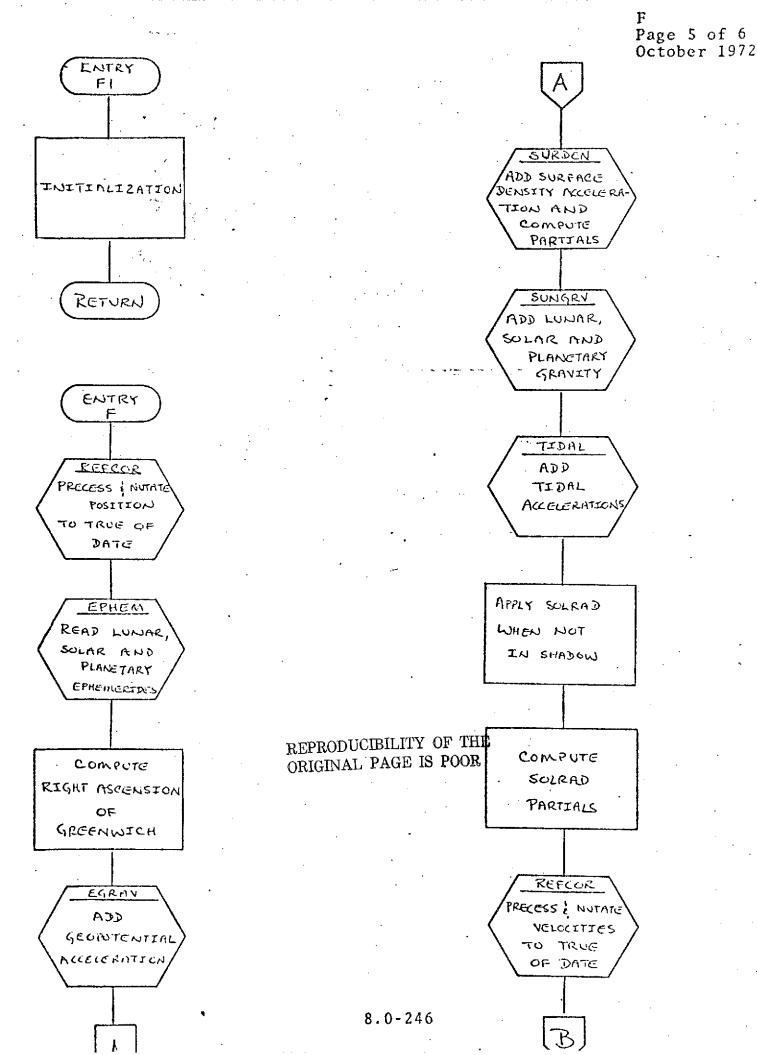
The satellite acceleration vector is computed in an instantaneous coordinate system, referred to the true equator and equinox at the integration time. REFCOR is called to transform the position, and velocity if required, from the reference to the instantaneous coordinate system. After the evaluation of the accelerations, REFCOR is again called to transform the acceleration vector to the inertial reference system for integration.

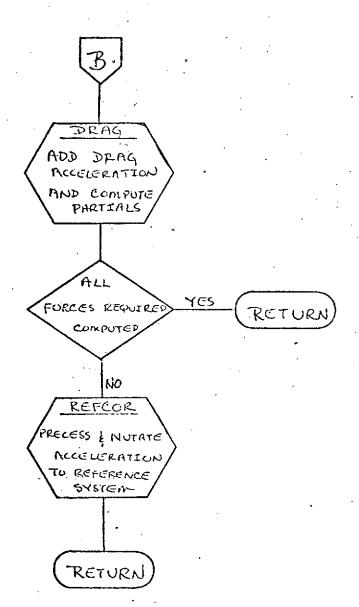
NAME	F			
ENTRY FOLKT	PURPOSE			
F1	INITIALIZATION			
F	TO EVALUATE SATELL FORCE MODEL PARTIAL	ITE ACCELERAT L DERIVATIVES	ION VECTOR	AND *
CALLING SEGUENÇE	(ALL F1(GRPAR)	•		
SYMBOL TYPE	DESCRIPTION			· .
GRP AR DP	CUTPLT - FORCE, MODI	EL FARTIAL VE		
CALLING SEQUENCE	CALL FIT.S.FOT.FCA	LL)	·	IBILITY OF THE PAGE IS POOR
SYMBOL TYPE	CESCRIPTION		REPRODUC	BILITY OF THE PAGE IS POOR
T DP	INPUT - TIME IN SE	CONES .	ORIGINAL	
S DP (6)	INPUT - SATELLITE	STATE VECTUR	•	
FCT DP	CUTPUT - SATELLITE	ACCELERATION	VECTOR	- ,
FCALL - L	INPUT - = TRUE + NO	ACCELERATION	NECESSAR	Υ .
	= FALSE · B	OTH ACCELERA	TIONS & PAR	TIALS
SUBROUTINES USEE	REFCOR EPHEM SUNGRY TICAL	EGRAV COTPRD	SURDEN	DRAG
COMMON .ELOCKS	CEPHEM CTIME	FMODEL	INTBLK	MOONGR
INPUT FILES	NONE		•	
CUTPUT FILES	NONE		÷	
references	• GEODYN SYSTEMS C NOLUME 1 - GECCYN		N ·	

SUBROLTINE FI (CRPAR)	. F	50
IMPLICIT REAL * E (A-H+O-Z)	F	51
LOGICAL FCALL . TOREFT	F	52
INTEGER ADDR. SEAD	F	53
DOUBLE PRECISION MODDY.LOVE.MODEL	F '	56
DIMENSIUN GEPAR(3, 1) . S(6) . P(3) . FCT(2)	F	55

```
56
             CCMMUNICEPHENIVARO (24), EO, GEPHEN (643)
                                                                                                                                                                         57
                                                                                                                                                            F
            CCPMUN/CTIME/CATALP(2), DAYO, CSTART, CAY2, DORHI(6), IY
                                                                                                                                                                         58
             CCMMON/FMODEL / INDEX1.1NDEX2.1NDEX3. INDEX4.CS(30.33).MDDEL(8)
                                                                                                                                                            F
             COMPUNITIONAL (1) EM3 (6) + ESTABLISHED TILESTONES (1) + EM3 (6) +
                                                                                                                                                                          50
                                                                                                                                                                          60
                    APGM(2), AFLM(4), THETGO, MBCDY(31), ADDR(4), SRAD(2), LOVE(3),
                                                                                                                                                                          61
                    TORRET INSUCY
                                                                                                                                                                          62
             CCMACK/MOUNGA/CPXUV(6).RHOM(3,6).RHCSO(12)
                                                                                                                                                         . F
                                                                                                                                                                          63
             CCHWON/XYZ/ELEW(C) .R .RSQ . ISAT . IF ORCE(2)
             RETURN
                                                                                                                                                                          65
             ENTRY F(T.S.F(T.FCALL)
                                                                                                                                                                          56
              IF (FCALL . AND . T . EQ . TPREV) RETURN
                                                                                                                                                                          67
             TPREVET
             CC 100 I=1.6
     100 ELE#(1)=S(1)
                                                                                                                                                                          70
             CAY2=1/0.64E4
                                                                                                                                                            F
                                                                                                                                                                          71
 C PRECESS AND NUTATE POSITION TO TRUE OF CATE .
                                                                                       REPRODUCIBILITY OF THE
                                                                                                                                                                          72
              CALL REFCOR(GAY2..FALSE..ELEM).
                                                                                                                                                                          73
 C READ LUNAR. SULAR. PLANETARY EPHEMERIDES
                                                                                        ORIGINAL PAGE IS POOR
                                                                                                                                                             F
                                                                                                                                                                          74
              CALL EPHEM (DAY 2 . . FALSE.)
                                                                                                                                                                          75
              DAY=ICINT(DAYE)
                                                                                                                                                                          76
              CCAY=LAY2-LAY
                                                                                                                                                                          77
 C COMPUTE RIGHT ASCENSION OF GREENWICH
                                                                                                                                                                          78
              THE TG = THE TGO + THOOT INDAY + THOOT 2 4 DDAY +EQ
                                                                                                                                                             F
                                                                                                                                                                          79
              INDEX2=INDEXI-1
                                                                                                                                                                          80
              IF(FCALL) INDEX2=INDEX4
                                                                                                                                                             E
                                                                                                                                                                          31
C ADD GEOPUTENTIAL ACCELERATION
                                                                                                                                                             F
                                                                                                                                                                          82
              CALL EGRAV(THEIG . FASAT . FCT)
                                                                                                                                                                          93
C -ADD SURFACE DENSITY ACCELERATION AND COMPUTE PARTIALS
                                                                                                                                                                          84
              CALL SURDEN (FCT:TESTG)
                                                                                                                                                                          55
 C ADD LUNAR. SULAR. FLANETARY GRAVITY
                                                                                                                                                                          85
              CALL SUNGRY (FCT)
  C ADD TIDAL ACCELERATIONS
              IF( . NUT . FCALL ) CALL TIDAL(FCT)
               [F(APGM(ISAT).EG.O.ODO) GO TC 700
               INDx=SRAD(ISAT)-IFCRCE(ISAT)
                                                                                                                                                                           21
               1F(APGM(ISAT).LT.0.000) GO TO 650
                                                                                                                                                                          òδ
               IF(CPAUV(2).GT.0.000) GU TO 500
                                                                                                                                                                          93
              DO: 450 I=1.3
      450 P(1)=ELEM(1)-CFXUV(2) *VARD(1+4)
                                                                                                                                                                           94
                                                                                                                                                                           95
              PMAG=DUTPRD(P.F)
              IF(FMAG-LT-AESC) GG TO 650
                                                                                                                                                                          ንሉ
                                                                                                                                                                           37
      500 IF(FCALL) GO TO 610
  C APPLY SCLAR RADIATION WHEN NOT IN SHADOW
                                                                                                                                                                           QP.
                                                                                                                                                                           30
               DO 600 I=1.3
    .600 FCT(1)=FCT(1)-APGM(1SAT)*VARD(1+4)
                                                                                                                                                                         100
      610 IF (INDX.LE.0) GO TO 700
                                                                                                                                                                         101
  C COMPUTE SCLAR HACIATION PARTIALS
                                                                                                                                                                         102
                                                                                                                                                                       .103
               E. [ = 1 & 3
      625 GRPAR(I.INDX)=-APLM(ISAT)*VARD([+4)
                                                                                                                                                                         104
               GO TO 700
      650 IF (INDX.LE.0) GO TO 700
                                                                                                                                                              F
               CO 660 1=1.3
      660 GRPAR(1.1NDX)=C.000
       700 IF(e(ISAT).EU.C.ODC) GO TO 800
                                                                                                                                                                          109
  C PRECESS AND NUTATE VELOCITIES TO TRUE OF DATE
                                                                                                                                                                         110
                                                                                                                                                                          111
               CALL REFCOR (DAYS. . FALSE . . ELEM(4))
```

	· · · · · · · · · · · · · · · · · · ·		F	112
	CT=LAY2-DAYU		F	113
C	ADD CRAG ACCELLRATION AND COMPUTE PARTIALS		F	114
	CALL DRAG(RASATIFCT.DT)	•	F	115
	BOO (F(FCALL) RETURN		F	116
C	PRECESS AND NUTATE ACCELERATION TO REFERENCE SYSTEM	•	F	117
	CALL REFCOR(DAY2. TRUE . FCT)	•	F	119
	RETURN	•	F	119
	END		-	





FLUXM

DESCRIPTION

FLUXM stores in half-word integers ten times the daily mean of the eight three-hourly geomagnetic indices, $\mathbf{K}_{\mathbf{p}^*}$

FLUX tables must be updated using the values obtained from bulletins printed by ESSA., Boulder, Colorado. An example of the bulletin is given on the following page.

GEOMAGNETIC ACTIVITY INDICES

	MAY 1972	1,	•
DAY	K _p THREE-HOUR RANGE INDICES 1 2 3 4 5 6 7 8	SUM Ci	C _p A _p
1 D 2 D 3 4 0 5 0	4- 4- 4 3- 3- 3 3+ 3- 3- 3 4 4 4 3 2 3- 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 1 4 1 1 2 2- 1 2 2- 1 6 4 2 2 2 1 1 1 3	26- 1.1 26- 1.1 15- 0.3 11+ 0.1 12- 0.2	1.0 15 1.0 16 0.4 7 0.2 5 0.3 6
6 7 60 8 60 9	2 1+ 3- 2 3 2+ 3- 2- 2 1- 0 0+ 0+ 1- 1- 1+ 1- 1- 0+ 0+ 1 1 2+ 1- 1+ 2 4- 3 3- 2+ 3+ 4- 2 2 3- 2+ 2 2 3 2	18- 0.6 6 0.0 7 0.1 22 0.9 18 0.5	0.5 5 9 0.1 3 0.1 4 0.8 14 0.5 9
11 12 13 14 15 D	1- 2+ 1+ 2 2 2+ 2 2+ 2 3 3 3- 2+ 1+ 2- 1+ 3 1+ 2- 0+ 1- 2+ 2+ 3 2+ 2- 2 2- 2 2- 2- 2- 1+ 0+ 1 2- 1 2 8- 6+	15 0.3 17* 0.5 15- 0.3 15- 0.3 21* 1.4	0.4 7 0.5 9 0.4 8 0.3 7 1.4 33
16 D 17 18 19 QU 20 QQ	6 4- 2+ 3- 2- 1+ 1+ 1+ 3 2+ 3- 1+ 2+ 3- 1+ 2 3+ 3+ 3- 3- 2- 1 1 1 1- 1 1- 1- 0+ 0+ 1 2 2 1 1- 2- 1- 0+ 0+ 2-	20+ 1.1 18- 0.6 17- 0.6 7- 0.2 8+ 0.2	1.0 18 0.5 9 0.5 10 0.1 4 0.1 4
21 60 22 0 23 24 Q 25 Q	1 * 1	8- 0.0 11 0.2 13- 0.4 9 0.2 11 0.2	0.1 4 0.2 5 0.4 7 0.2 5 0.2 5
26 27 28 D 29 30	3+ 2 1 1+ 1 2+ 3- 3 2 1+ 0+ 1- 1+ 3- 3 3 3 2 3- 3+ 4 5+ 4+ 2- 2+ 3- 2 3 2+ 2+ 2- 2+ 3 3 1+ 2- 3+ 4- 4- 3-	16 0.3 14 0.4 26 1.2 19 0.6 22 0.8	0.5 0.4 1.1 22 0.5 0.8 14
31	3- 4- 3 3- 2+ 2+ 1+ 3	21 0.8	0.7 12
		MEAN 0.50	0.49 10

NAME FLUXM PURPOSE STORES MAGNETIC FLUX INDICES. VALUES ARE DA.L. MEANS OF KP TIMES 10 CALLING SEQUENCE CALL FLUXM(NARCS) SYMBOL TYPE DESCRIPTION ... NARCS T DUTPUT - NUMBER OF ARCS SUBROUTINES USED FLUXS COMMON BLOCKS NCNE INPUT FILES NONE OUTPUT FILES NONE REFERENCES "SOLAR GEOPHYSICAL DATA, PART 1" E.S.S.A., BOULDER, COLD. *GECDYN SYSTEMS DESCRIPTION*

```
SUBROUTING FLUXM(HARCS)
                                                                       FLUX
 INTEGER NELUXS/5785/
                                                                       FLUX
                                                                              28
 INTEGER #2 MFLUX(5785)
                                                                       FLUX
                                                                              29
 IN TEGER #2
                                                                       FLUX
                                                                              30
    MGF01(122) .MGF02(184) .MGF03(181) .MGF04(184) .MGF05(182) .
                                                                       FLUX
                                                                              31
    MGF06(184) .MGF07(181) .MGF08(184) .MGF09(181) .MGF10(184) .
                                                                       FLUX
                                                                              32
    MGF11(181), MGF12(184), MGF13(182), MGF14(184),
                                                                       FLUX
                                                                              33
    MGFLU1(181). MGFLU2(184). MGFLU3(181). MGFLU4(184). MGFLU5(181).
                                                                       FLUX
                                                                              34
    MGFLU6(184) • MGFLU7(182) • MGFLU8(184) • MGFLU9(181) • MGFL10(184) •
                                                                       FLUX
                                                                              35
    MGFL11(181) . MGFL12(184) . MGFL13(181) . MGFL14(184) . MGFL15(182) .
                                                                       FLUX
                                                                              36
    MGFL16(184) . MGFL17(181) . MGFL18(184)
                                                                       FLUX
                                                                              37
 EQUIVALENCE
                                                                       FLUX
                                                                              38
.(MFLUX(1
            } * MGF01(1)) * (MFLUX(123 ) * MGF02(1)) *
                                                                       FLUX
                                                                              39
.(MFLUX(307 ). MGFC3(1)).(MFLUX(488 ). MGFO4(1)).
                                                                       FLUX
                                                                              40
.(MFLUX(672 ). MGF05(1)),(MFLUX(854 ). MGF06(1)).
                                                                       FLUX
                                                                              41
•(MFLUX(1038) . MGF07(1)) .(MFLUX(1219) . MGF08(1)).
                                                                       FLUX
                                                                              42
(MFLUX(1403) + MGF09(1)) + (MFL!!X(158+) + MGF10(1))
                                                                       FLUX
                                                                              43
•(MFLUX(1768) * MGF11(1)) *(MFLUX(1949) * MGF12(1)) *
                                                                       FLUX
                                                                              44
•(MFLUX(2133) . MGF13(1)) .(MFLUX(2315), MGF14(1)).
                                                                       FLUX
                                                                              45
*(MFLUX(2499) . MGFLU1(1)) . (MFLUX (2683) . MGFLU2(1)).
                                                                       FLUX
                                                                              46
.(MFLUX(2864) .MGFLU3(1)) .(MFLUX(3045) .MGFLU4(1)).
                                                                       FLUX
                                                                              47
• (MFLUX( 3229) • MGFLUS(1)) • (MFLUX (3410) • MGFLU6(1)) •
                                                                       FLUX
                                                                              48
(MFLUX(3554),MGFLU7(1)),(MFLUX(3775),MGFLUB(1)),
                                                                       FLUX
                                                                              49
.(MFLUX(3500).MGFLU9(1)).(MFLUX(4141).MGFL10(1)).
                                                                       FLUX
                                                                              50
(MFLUX(4325), MGFL11(11), (MFLUX(4505), MGFL12(11)),
                                                                       FLUX .
                                                                              51
(MFLUX(4650).MGFL13(1)).(MFLUX(4871).MGFL14(1)).
                                                                       FLUX
                                                                              52
.(MFLUX(5055).MGFL15(1)).(MFLUX(5237).MGFL16(1)).
                                                                       FLUX
                                                                              5.3
•(MFLUX(5421).MGFL17(1)).(MFLUX(5602).MGFL18(1))
                                                                       FLUX
                                                                              54
FLUX
                                                                              55
```

```
FLUX
                                                                          56
DATA MGFG1/
                                                                 31.FLUX
                                                                           57
   17, 20, 36, 41, 47, 45, 39, 37, 35, 33, 37, 56, 50, 35, 37,
   40. 44. 49. 46. 44. 38. 36. 40. 44. 40. 32. 30. 24. 43.
                                                             33,
                                                                    FLUX
                                                                          58
                                                                          59
   34, 44, 33, 45, 39, 37, 32, 23, 23, 13, 20, 17, 17, 35,
                                                                 43.FLUX
   52, 49, 38, 30, 29, 17, 20, 30, 25, 28, 24, 38, 43, 41,
                                                                          60
                                                                    FLUX
   36, 26, 20, 22, 27, 22, 17, 26, 24, 35, 24, 29, 41, 46,
                                                             40 .
                                                                 31.FLUX
                                                                           61
   32. 33. 24. 13. 17. 13. 10. 3. 24. 47. 38. 33. 52. 27.
                                                             58.
                                                                    FLUX
                                                                           62
   55. 39. 17. 13. 22. 30. 59. 28. 43. 43. 33. 30. 23. 30.
                                                                 24.FLUX
                                                                          63
   10. 20. 23. 22. 56. 46. 28. 33. 31. 22. 22. 53. 65. 23/
                                                                    FLUX
                                                                           64
   -- MAGNETIC FLUX FCR 580701 TC 581231
                                                                    FLUX
                                                                           65
DATA MGF02/
                                                                    FLUX
                                                                           66
   32. 17. 30. 36. 26. 17. 32. 79. 59. 32. 30. 36. 30. 29. 17.
                                                                 20.FLUX
                                                                           67
   31. 44. 39. 37. 52. 35. 17. 33. 37. 26. 41. 24. 23. 27. 30.
                                                                    FLUX
                                                                           68
   30, 27, 24, 10, 13, 13, 27, 10, 20, 31, 30, 24, 27, 20, 23,
                                                                 27.FLUX
                                                                           €9
   60. 35. 26. 17. 17. 44. 28. 61. 33. 29. 56. 28. 26. 23. 20.
                                                                    FLUX
                                                                           70
   13. 13. 56. 70. 58. 17. 31. 35. 39. 27. 20. 13. 7. 10. 17.
                                                                 47.FLUX
                                                                           71
   28. 10. 10. 10. 10. 10. 13. 17. 60. 39. 24. 22. 13. 35.
                                                                           72
                                                                    FLUX
                                                                 23.FLUX
   30. 26. 33. 13. 28. 27. 29. 24. 13. 10. 17. 7. 20. 20.
                                                             24,
                                                                           73
   23, 22, 22, 17, 17, 50, 49, 62, 24, 26, 42, 46, 35, 34, 27,
                                                                           74
                                                                    FLUX
                                                                           75
   20. 31. 27. 24. 7. 7. 17. 7. 10. 27. 32. 23. 17. 7.
                                                                 23.FLUX
                                                             17.
   23. 22. 13. 10. 10. 7. 20. 22. 24. 22. 23. 33. 27.
                                                                           76
                                                                    FLUX
                                                         - 3∙
    3, 37, 20, 52, 41, 27, 17, 24, 27, 10, 22, 17, 51, 34, 24,
                                                                 31.FLUX
                                                                           77
                                                                           78
   42, 44, 36, 30, 22, 23, 27, 20, 10, 28, 27, 29, 24, 27,
                                                                    FLUX
   -- MAGNETIC FLUX FOR 590101 TC 590630
                                                                           79
                                                                    FLUX
DATA MGF03/
                                                                    FLUX
                                                                           80
    2. 7. 17. 20. 39. 38. 34. 33. 46. 49. 29. 28. 23. 22. 22.
                                                                 32.FLUX
                                                                           21
   33, 34, 24, 10, 7, 20, 22, 10, 33, 37, 23, 23, 32, 26, 29,
                                                                    FLUX
                                                                           22
   26: 37: 37: 45: 38: 33: 26: 27: 37: 17: 45: 28: 26: 42: 46:
                                                                 55.FLUX
                                                                           23
   38. 10, 27, 10, 17, 32, 30, 10, 57, 50, 42, 49,
                                                                    FLUX
                                                                           84
   A8, 43, 37, 29, 27, 17, 17, 26, 10, 3, 10, 33, 27, 22, 17,
                                                                 10.FLUX
                                                                           25
   17. 20. 17. 13. 17. 13. 26. 22. 43. 60. 77. 62. 58. 35. 34.
                                                                    FLUX
                                                                           86
   26, 17, 27, 20, 17, 17, 22, 37, 49, 64, 37, 24, 23, 26, 24,
                                                                 17.FLUX
                                                                           87
   20: 13: 10: 13: 22: 7: 47: 40: 37: 33: 29: 27: 38: 36:
                                                                    FLUX
   23, 20, 20, 31, 41, 7, 17, 44, 31, 29, 39, 66, 29, 13, 44,
                                                                 45.FLUX
   28. 38. 29. 24. 28. 30. 27. 52. 39. 20. 13. 7.
                                                     7, 17, 37,
   20. 34. 31. 37. 30. 27. 22. 26. 34. 27. 38. 17. 10. 23. 22.
                                                                 17.FLUX
                                                                           51
   17, 22, 20, 22, 22, 26, 30, 39, 17, 29, 43, 44, 51, 46/
                                                                   FLUX
                                                                           92
   -- MAGNETIC FLUX FCR 590701 TC 591231
                                                                    FLUX
                                                                           93
DATA MGF04/
                                                                    FLUX
                                                                           94
   13. 29. 13. 30. 31. 26. 29. 29. 33. 28. 49. 38. 26. 31. 83.
                                                                 50.FLUX
                                                                           95
   66, 68, 43, 33, 31, 28, 28, 41, 46, 44, 39, 28, 24, 10,
                                                             30 •
                                                                    FLUX
                                                                           56
   35, 31, 35, 34, 23, 37, 29, 29, 37, 29, 22, 13, 17, 17, 40,
                                                                 70. FLUX
   67. 41. 36. 41. 44. 40. 41. 35. 30. 22. 13. 7. 28. 23.
                                                                    FLUX
                                                             23.
   35, 44, 44, 65, 44, 33, 20, 24, 17, 22, 30, 29, 29, 33,
                                                                 31.FLUX
                                                             33.
   37, 40, 45, 55, 61, 58, 38, 38, 46, 37, 36, 33, 23, 27,
                                                                    FLUX 100
   49. 37. 49. 51. 46. 52. 30. 22. 17. 10. 7. 20. 10. 28.
                                                             30.
                                                                 10.FLUX 101
   32. 45. 30. 22. 17. 34. 24. 17. 37. 39. 26. 10. 17. 41.
                                                             46.
                                                                   , FLUX 102
   48. 57. 50. 45. 41. 37. 26. 28. 23. 24. 13. 20. 27. 41.
                                                             13.
                                                                 22.FLUX 103
   27. 25. 26. 10. 31. 32. 47. 22. 24. 28. 30. 60. 30. 48.
                                                                    FLUX 104
   41. 42. 51. 27. 57. 31. 17. 20. 22. 17. 17. 31. 33. 47.
                                                                  32. FLUX 105
                                                             39.
   22. 24. 29. 17. 10. 17. 41. 30. 22. 39. 46. 47. 33. 29.
                                                             20/
                                                                    FLUX 105
   -- MAGNETIC FLUX FOR 600101 TC 500630
                                                                    FLUX 107
DATA MGFC5/
                                                                    FLUX 108
   10. 13. 17. 24. 38. 23. 17. 13. 10. 48. 40. 30. 24. 48. 42.
                                                                 17.FLUX 109
   29, 37, 22, 32, 51, 35, 33, 33, 24, 20, 23, 17, 27,
                                                         3.
                                                             7.
                                                                    FLUX 110
   22. 30. 34. 33. 34. 34. 13. 24. 17. 17. 22. 17. 26. 41. 23.
                                                                 40.FLUX 111
```

```
37, 41, 36, 34, 37, 24, 24, 10, 10, 17, 37, 17, 31,
                                                                         FLUX 112
         34. 37. 36. 31. 29. 28. 10. 28. 26. 37. 44. 22. 13. 22. 36.
                                                                      52,FLUX 113
         36, 27, 24, 10, 20, 13, 13, 31, 17, 20, 17, 32, 33, 35, 70,
                                                                         FLUX 114
         84. 55, 57. 39, 44. 32. 37. 31. 29. 44. 39. 45. 41. 29. 38.
                                                                      41,FLUX 115
         42. 36. 10. 3. 7. 13. 30. 56. 54. 33. 43. 61. 53. 76.
                                                                         FLUX 116
                                                                      48.FLUX 117
        50, 30, 22, 13, 24, 55, 53, 69, 31, 27, 48, 35, 26, 28, 24,
         29, 17, 13, 10, 17, 13, 39, 43, 34, 34, 31, 33, 52, 33, 28,
                                                                         FLUX -118
         41: 13: 22: 52: 37: 39: 30: 38: 34: 17: 13: 13: 17: 29: 26: 17: FLUX 119
         20. 29, 31, 22, 31, 28, 26, 28, 39, 37, 56, 45, 45, 53/
                                                                         FLUX 120
        --- MAGNETIC FLUX FOR 600701 TC 501231
                                                                         FLUX 121
     DATA MGF06/
                                                                         FLUX 122
         39. 31. 28. 35. 31. 27. 13. 7. 10. 22. 24. 24. 27. 47. 63.
                                                                      59, FLUX 123
         38, 29, 45, 39, 24, 24, 23, 24, 10, 22, 17, 17, 41, 41, 46,
                                                                         FLUX 124
         29. 33. 20. 20. 7. 20. 20. 31. 37. 29. 37. 38. 22. 29. 22.
                                                                      52.FLUX 125
         66, 31, 36, 39, 41, 29, 20, 17, 7, 10, 31, 29, 49, 54, 31,
                                                                         FLUX 125
         7. 35. 45. 64. 68. 41. 40. 34. 31. 28. 30. 26. 36. 28. 10.
                                                                      10.FLUX 127
         22. 31. 10. 13. 22. 24. 29. 40. 13. 24. 32. 20. 29. 41.
                                                                         FLUX 128
         50. 50. 30. 45. 44. 80. 78. 44. 46. 24. 32. 17. 10.
                                                              7, 32,
                                                                      17,FLUX 129
         20. 40. 24. 24. 22. 3. 7. 36. 59. 55. 46. 49. 47. 44. 41.
                                                                         FLUX 130
         27. 31. 33. 52. 26. 17. 17. 7. 13. 17. 33. 57. 86. 50. 57. 33. 13. 17. 23. 49. 42. 24. 31. 47. 32. 36. 36. 23. 32.
                                                                      63.FLUX 131
                                                                         FLUX 132
         63, 39, 23, 17, 24, 36, 39, 37, 35, 24, 23, 33, 29, 17, 48,
                                                                      44,FLUX 133
         20, 39, 32, 38, 39, 35, 29, 30, 23, 31, 51, 37, 34, 32,
                                                                         FLUX 134
        --- MAGNETIC FLUX FOR 610101 TC 510630
                                                                         FLUX 135
      DATA MGF07/
                                                                         FLUX 136
         20. 10. 13. 7. 10. 17. 22. 37. 42. 13. 2. 13. 23. 13. 34.
                                                                      27.FLUX 137
         22. 32. 39. 47. 33. 36. 17. 33. 33. 27. 22. 27. 23. 10. 10.
                                                                         FLUX 138
             3. 28. 48. 41. 37. 26. 23. 20. 10. 23. 3. 37. 22. 20.
                                                                       AO. FLUX 130
        41, 51, 33, 42, 37, 33, 26, 24, 7, 10, 23, 27,
                                                                         FLUX 140
         22. 22. 13. 7. 29. 46. 7. 13. 28. 49. 17. 20. 24. 39. 38.
                                                                      35.FLUX 141
         29, 27, 46, 32, 26, 28, 24, 22, 13, 23, 37, 32, 31, 24, 17,
                                                                         FLUX 142
         32. 29. 40. 17. 13. 23. 22. 17. 38. 32. 39. 24. 30. 52. 55.
                                                                      28. FLUX 143
         10, 13, 20, 20, 3, 22, 22, 26, 22, 29, 27, 20, 13, 23,
                                                                         FLUX 144
         30. 34. 10. 22. 35. 42. 35. 26. 30. 22. 34. 30. 37. 24. 10.
                                                                       41,FLUX 145
         22. 7. 22. 28. 13. 26. 29. 22. 44. 20. 17. 24. 13. 23. 37.
                                                                         FLUX 146
         42. 41. 24. 22. 23. 32. 38. 31. 17. 10. 3. 22. 7. 10. 26.
                                                                      24.FLUX 147
         17. 29. 20. 24. 54. 54. 23. 17. 23. 17. 20. 10. 39. 10/
                                                                         FLUX 148
C----- MAGNETIC FLUX FOR 610701 TC 511231
                                                                         FLUX 149
      DATA MGFC8/
                                                                         FLUX 150
         24. 27. 31. 31. 49. 31. 29. 24. 23. 29. 23. 13. 65. 64. 39.
                                                                       37.FLUX 151
         45, 63, 33, 34, 45, 27, 32, 28, 29, 37, 67, 33, 22, 22, 17,
                                                                         FLUX 152
         22. 48. 33. 33. 23. 20. 10. 32. 10. 26. 38. 20. 3. 22. 22.
                                                                       13.FLUX 153
         13. 13. 23. 17. 13. 3. 7. 10. 23. 26. 22. 13. 31. 46. 42.
                                                                         FLUX 154
         41. 28. 27. 13. 27. 13. 10. 10. 22. 20. 27. 32. 22. 41. 17.
                                                                      20.FLUX 155
         26, 20, 7, 23, 3, 17, 3, 48, 45, 33, 39, 13, 17, 45,
                                                                         FLUX 156
         67, 17, 13, 20, 10, 13, 17, 17, 7, 3, 27, 35, 29, 17,
                                                                   7,
                                                                        2.FLUX 157
         2. 7. 17. 33. 22. 13. 17. 13. 22. 43. 42. 69. 43. 17.
                                                                  13.
                                                                         FLUX 158
         13. 10. 10. 10. 34. 31. 48. 37. 27. 13. 7. 30. 10. 28.
                                                                   2.
                                                                        7. FLUX 159
         31. 50. 26. 28. 20. 3. 3. 7. 10. 13. 10. 7.
                                                          7.
                                                               з.
                                                                         FLUX 160
         52. 56. 53. 24. 26. 30. 17.
                                     3. 7. 17. 29. 17. 10. 10.
                                                                  20.
                                                                       10.FLUX 161
         10. 3. 2. 7. 7. 17. 27. 24. 3. 10. 23. 33. 28. 31.
                                                                         FLUX 162
        --- MAGNETIC FLUX FOR 620101 TC 520630
                                                                         FLUX 163
      DATA MGF09/
                                                                          FLUX 164
         17. 23. 3. 2. 2. 7. 7. 10. 17. 52. 27. 10. 13. 26. 24.
                                                                       27.FLUX 165
         10. 3.30.10.20. 2. 2. 2.10.22.24. 7.20.20.
                                                                  2.
                                                                         FLUX 116
                                      7. 17. 7. 28. 35. 28. 30. 27. 41. FLUX 167
          2. 10, 10, 35, 20, 17, 35,
```

```
7. 7. 20. 28. 24. 23. 22. 32. 32.
                                                                      FLUX 168
   20, 20, 20, 17, 32, 43, 22, 3, 3, 27, 27, 31, 22, 10, 24,
                                                                  10.FLUX 169
   10. 22. 28. 28. 30. 10. 10. 20. 23. 10. 10. 10. 22.
                                                          7, 10.
                                                                      FLUX 170
   26: 23: 28: 27: 20: 40: 54: 43: 27: 42: 37: 23: 13:
                                                          7, 23,
                                                                   20.FLUX 171
   22. 27. 20. 24. 35. 42. 27. 10. 28. 26. 20. 22. 17. 13.
                                                                      FLUX 172
   23, 23, 20, 3, 10, 37, 20, 17, 3, 17, 23, 7, 28, 30, 30,
                                                                   22.FLUX 173
   :7. 3. 24. 13. 7. 7. 3. 3. 3. 10. 27. 17. 17.
                                                                     FLUX 174
                                                          7. 37.
   23. 13. 13. 28. 24. 24. 23. 7. 37. 32. 17. 22. 13. 22.
                                                                   17.FLUX 175
                                                              26.
    3. 3. 10. 10. 27. 24. 30. 17. 17. 20. 34. 32. 29. 28/
                                                                      FLUX 176
  --- MAGNETIC FLUX FOR 620701 TC 621231
                                                                      FLUX 177
DATA MGF10/
                                                                      FLUX 178
   23, 22, 22, 34, 31, 27, 22, 24, 17, 22, 23, 20, 26, 23, 17,
                                                                    7.FLUX 179
    3, 10, 24, 31, 27, 20, 22, 31, 30, 49, 41, 33, 24, 13, 26,
                                                                      FLUX 180
   46. 24. 26. 17. 22. 33. 36. 43. 34. 24. 3. 10. 13. 23.
                                                                   36,FLUX 121
                                                              37.
   38, 36, 32, 13, 20, 43, 32, 35, 28, 22, 13, 10, 30, 28, 41, 44, 50, 45, 31, 37, 29, 29, 26, 26, 23, 54, 37, 26,
                                                                      FLUX 182
                                                              39.
                                                                   24. FLUX 183
   20. 13. 47. 28. 27. 36. 28. 17. 20. 43. 23. 23. 34. 29.
                                                                      FLUX 184
   48. 37. 26. 24. 27. 32. 27. 45. 43. 37. 39. 23. 26. 42.
                                                                   35.FLUX 185
                                                              24,
   20, 32, 41, 26, 29, 37, 37, 40, 44, 44, 41, 33, 27, 29,
                                                              23.
                                                                      FLUX 186
   22. 30. 29. 34. 17. 38. 30. 22. 13. 10. 26. 10.
                                                      7: 20:
                                                              39.
                                                                   40.FLUX 187
   22. 2. 10. 10. 34. 45. 35. 31. 34. 17. 23. 20. 22. 43. 20. 7. 10. 32. 20. 7. 10. 20. 20. 39. 26. 31. 28. 26.
                                                                      FLUX 188
                                                                   13.FLUX 189
   45, 49, 48, 45, 37, 26, 10, 10, 10, 32, 17, 10, 13, 10,
                                                              27/
                                                                      FLUX 190
   -- MAGNETIC FLUX FOR 630101 TC 530630
                                                                      FLUX 191
DATA MGF11/
                                                                      FLUX 192
  13. 2. 3. 22. 7. 0. 20. 3. 0. 7. 17. 13. 41. 43. 39. 24. 30. 30. 34. 41. 43. 39. 234. 30. 3. 34. 34. 41. 48.
                                                                   38.FLUX 193
                                                                     FLUX 194
   28. 3. 7. 7. 7. 10. 7. 2. 22. 49. 36. 36.
                                                     40. 34. 22.
                                                                   10. FLUX 195
        7. 3.23.17.17.17.
                                 3. 10. 13.
                                                                      FLUX 196
                                              3. 20.
   30. 17. 22. 10. 7. 13. 23. 43. 33. 50. 35. 27. 22.
                                                                    3. FLUX 197
                                                               3.
                                                           3.
   10. 17. 20. 10. 7. 3. 26. 10. 7. 3.
                                             2. 10. 13.
                                                                      FLUX 158
                                                          7. 10.
   27, 10, 10, 34, 43, 34, 30, 20, 20, 3,
                                             7. 23. 24. 32.
                                                                   17, FLUX 199
                                                              30.
   20, 30, 24, 20, 10, 26, 23, 3, 10, 13, 24, 7, 10, 37,
                                                                      FLUX 200
   45, 38, 29, 34, 24, 23, 17, 24, 29, 29, 33, 23, 37, 27, 17,
                                                                   22. FLUX 201
        7. 13. 22. 13. 7. 7. 3. 22. 17. 20. 31. 36. 27. 23.
                                                                      FLUX 202
   26. 24. 17. 13. 3. 31. 48. 27. 24. 13. 17. 13. 13. 13. 23.
                                                                    3.FLUX 203
   23, 36, 24, 28, 22, 10, 10, 17, 37, 39, 31, 28, 23, 26/
                                                                      FLUX 204
  --- MAGNETIC FLUX FCR 630701 TC 631231
                                                                      FLUX 205
DATA MGF12/
                                                                      FLUX 206
   13,
       7. 7. 29. 33. 35. 26. 28. 30. 24. 17. 10. 13. 10. 10.
                                                                   20.FLUX 207
   31. 23. 13. 20. 39. 28. 37. 42. 28. 29. 31. 17. 10. 41. 33.
                                                                      FLUX 208
   32, 30, 23, 28, 27, 26, 24, 17, 23, 20, 10, 10,
                                                      7. 7. 20.
                                                                   17.FLUX 209
   23. 39. 38. 54. 40. 22. 33. 23. 22. 24. 31. 39. 30. 24. 32.
                                                                      FLUX 210
   30. 22. 23. 13. 23. 23. 13. 30. 29. 23. 35. 28. 22. 60.
                                                               46.
                                                                   44.FLUX 211
   48, 30, 39, 28, 49, 69, 59, 33, 55, 40, 44, 50, 34, 27,
                                                                      FLUX 212
       7. 10. 17. 22. 13. 26. 31. 17. 23. 37. 47. 38. 43. 31.
                                                                   31.FLUX 213
   13, 13, 13, 28, 23, 7, 7, 55, 31, 22, 10, 20, 58, 45, 17,
                                                                      FLUX 214
   22. 31. 31. 17. 3. 27. 47. 50. 44. 41. 31. 29. 13. 13.
                                                              10.
                                                                    7.FLUX. 215
       7, 3, 10, 3, 17, 22, 35, 31, 3, 10, 13, 22, 33,
                                                                      FLUX 216
   13, 27, 45, 39, 41, 37, 30, 29, 20, 0, 3, 10, 22, 26, 20,
                                                                   20.FLUX 217
   10. 3. 10. 35. 26. 28. 28. 24. 7. 10. 10. 26. 31. 13.
                                                               7/
                                                                      FLUX 218
   --- MAGNETIC FLUX FCR 640101 TC 540630
                                                                      FLUX 219
DATA MGF13/
                                                                      FLUX 220
   17. 52. 36. 34. 22. 13. 20. 17. 35. 36. 22. 17. 17.
                                                           2.
                                                                3.
                                                                   40.FLUX 221
   32. 20. 20. 17. 3. 10. 10. 26. 31. 20. 10. 23. 36. 24. 39.
                                                                      FLUX 222
   24. 22. 3. 27. 26. 42. 30. 35. 30. 20. 7. 29. 43. 24. 20. 13.FLUX 223
```

```
17. 13. 3. 33. 30. 20. 22. 20. 34. 33. 30. 32. 22.
                                                                      FLUX 224
        10. 2. 20. 52. 44. 32. 27. 33. 23. 10. 22. 31. 22. 24. 26. 22.FLUX 225
                                                       7, 39, 7,
                                                                      FLUX 226
            7. 7. 22. 27. 41. 42. 34. 31. 26. 7. 0.
        49, 39, 33, 26, 26, 17, 24, 29, 20, 13, 29, 10, 13, 10, 23,
                                                                   23.FLUX 227
        31. 36. 37. 30. 23. 3. 7. 10. 26. 24. 39. 44. 31. 26.
                                                                      FLUX 228
       37. 26. 10. 10. 23. 10. 7. 2. 3. 35. 34. 3. 33. 40. 41.
                                                                   36.FLUX 229
        23. 13. 10. 7. 13. 10. 17. 36. 43. 20. 26. 22. 13. 17. 10.
                                                                     FLUX 230
        13. 10, 10, 10. 7, 10, 13, 23, 22, 50, 39, 27, 23, 20, 17, 10. FLUX 231
        10. 20. 13. 32. 26. 13. 17. 13. 24. 13. 13. 26. 17.
                                                            7/
                                                                      FLUX 232
C----- MAGNETIC FLUX FOR 640701 TC 541231
                                                                      FLUX 233
... DATA HGF14/
                                                                      FLUX 234
                                                                3. 20.FLUX 235
        10. 7. 33. 22. 13. 13. 33. 36. 31. 28. 17. 17. 17.
                                                            7.
        37. 38. 29. 24. 17. 23. 13. 10. 13. 10. 3. 3. 31. 29. 20.
                                                                      FLUX 236
        17. 10. 13. 44. 31. 20. 28. 10. 22. 7. 40. 29. 20. 10.
                                                                7. 17.FLUX 237
                                                                      FLUX 238
        13, 17, 13, 10, 10, 20, 10, 7, 22, 24, 22, 7, 13,
                                                           7, 28,
        35. 24. 23. 23. 17. 27. 41. 37. 31, 24. 10. 3.
                                                           3.
                                                                7.
                                                                    28.FLUX 239
                                                        3∙
        23. 13. 7. 3. 13. 49. 22. 23. 13. 10. 17. 45. 20. 37.
                                                                      FLUX 240
                                                                    10.FLUX 241
        23. 10. 24. 42. 35. 28. 28. 30. 29. 10. 7. 30. 20. 20. 17.
                                                               З.
     • 17. 27. 39. 27. 30. 7. 2. 13. 10. 33. 17. 13. 20. 7.
                                                                      FLUX 242
        29, 28, 10, 20, 23, 10, 2, 22, 34, 26, 13, 22, 10,
                                                           2٠
                                                               27.
                                                                    24.FLUX 243
        13, 13, 3, 7, 7, 17, 35, 3, 3, 26, 10, 24, 40, 26,
                                                                      FLUX 244
        22. 7. 13. 10. 3. 7. 24. 17. 13. 7. 7. 3. 23. 20. 22.
                                                                    30.FLUX 245
        30. 17. 23. 10. 10. 7. 10. 7. 10. 13. 3. 7. 10.
                                                             З,
                                                                      FLUX 246
       ---- MAGNETIC FLUX FCR 650101 TC 550630
                                                                      FLUX 24.7
     DATA MGFLUI
                                                                       FLUX 248
         7. 26. 20. 10. 3. 3. 10. 28. 20. 13. 3. 27. 28. 17. 17.
                                                                     7. FLUX 249
       124. 13. 10. 20. 24. 35. 20. 3. 3. 7. 17. 13. 13. 10.
                                                                      FLUX 25v
                                                               7.
        10. 3. 13. 24. 13. 24. 43. 32. 32. 24. 27. 24. 10. 10. 26. 27.
                                                                    17.FLUX 251
         3. 10. 10. 13. 32. 13. 33. 26. 29. 20. 23. 17.
                                                                       FLUX 252
        20, 22, 39, 36, 20, 10, 20, 3, 10, 3, 10, 10, 24, 17, 27,
                                                                    10.FLUX 253
        13. 3. 10. 13. 22. 22. 39. 27. 35. 28. 23. 13. 17. 3. 10.
                                                                      FLUX 254
        10. 3. 7.17.10.20.22.10.26.17.22.20.13.13.10.
                                                                    10.FLUX 255
        26. 57. 29. 24. 7. 13. 13. 13. 10. 17. 13. 7. 13. 13.
                                                                       FLUX 256
        10. 3. 7. 10. 39. 17. 13. 26. 27. 20. 3. 10.
                                                        7. 7. 10.
                                                                    33.FLUX 257
        13. 10. 3. 10. 13. 17. 13. 17. 7. 10. 17. 13.
                                                         7. 7. 10.
                                                                      #LUX 258
        13, 17, 23, 26, 17, 13, 7, 23, 27, 3, 13,
                                                        3. 17. 34.
                                                    7.
                                                                    58.FLUX 259
        .44, 26, 3, 3, 3, 10, 7, 7, 26, 24, 17, 7, 26, 29/
                                                                       FLUX 260
        --- MAGNETIC FLUX FOR 650701 TC 551231
                                                                       FLUX 261
      DATA MGFLU2 /
                                                                       FLUX 262
        28, 13, 13, 7, 7, 34, 22, 36, 27, 29, 3, 13, 13, 10, 24,
                                                                    10.FLUX 263
         3, 17, 28, 13, 7, 10, 28, 20, 17, 10, 22, 30, 27, 10,
                                                               7,
                                                                       FLUX 264
         13, 26, 17, 20, 10, 7, 17, 17, 20, 10, 17, 17, 7, 22, 17,
                                                                    20.FLUX 265
        26. 36. 40. 32. 27. 13. 23. 29. 28. 20. 17. 7. 17. 22. 26.
                                                                       FLUX 266
         17. 13. 10. 31. 23. 23. 20. 10. 7. 7. 10. 26. 17.
                                                            7. 30.
                                                                    45. FLUX 267
         33. 31. 32. 13. 13. 13. 24. 24. 27. 23. 35. 40. 20.
                                                             7,
                                                                       FLUX 268
         3. 31. 7. 2. 22. 3. 17. 30. 10. 7. 7. 17. 22. 17.
                                                                     3.FLUX 269
                                                                 3.
         3, 17, 10, 3, 2, 29, 34, 29, 26, 20, 17, 30, 13, 22,
                                                                17.
                                                                     · FLUX 270
         10. 13. 2. 22. 28. 32. 23. 10. 13. 0.
                                                7.
                                                    7. 24.
                                                            7.
                                                                 з.
                                                                     2.FLUX 271
         10. 17. 24. 32. 24. 10. 3. 10. 13. 10. 10.
                                                    3. 7. 27.
                                                                       FLUX 272
        34. 23. 3. 26. 7. 7. 7. 10. 17. 24. 24. 24. 17.
                                                            з,
                                                                 2,
                                                                     2.FLUX 273
          3. 27. 20. 10. 3. 17. 7. 23. 27. 34. 24. 31. 22. 17.
                                                                 7/
                                                                       FLUX 274
        --- MAGNETIC FLUX FOR 660101 TC 560630
                                                                       FLUX 275
      DATA MGFLU3 /
                                                                       FLUX 276
          3, 22, 17, 26, 10, 3, 20, 22, 22, 20,
                                                 3. 3.
                                                         3.
                                                             7. 13.
                                                                     0.FLUX 277
          3, 13, 7, 30, 37, 40, 29, 29, 26, 29, 7, 20, 17,
                                                             3. 3.
                                                                       FLUX 278
          7. 7. 26. 23. 33. 22. 10. 10. 7. 20. 27. 13. 17.
                                                             3. 10.
                                                                   13.FLUX 279
```

```
7, 29, 32, 10, 29, 41, 34, 24, 7, 10,
                                                                    FLUX 200
                                                 з,
        7, 24, 23, 13, 10, 3, 7, 10, 24, 17, 17, 29, 56, 20, 20, FLUX 281
                                                             7.
                                                                    FLUX 282
   17. 10. 35, 24, 22, 20. 57. 3, 29, 35, 28, 48, 27, 17.
                                                                  7.FLUX 283
   33, 28, 20, 22, 17, 20, 24, 24, 13, 13, 3, 7, 30, 22, 10,
                                                                    FLUX 284
        7. 3.13.13.28.24.17. 7. 7. 2.10.17.24.
                                                              з.
                                                                 13.FLUX 285
   22. 27. 13, 27. 17. 20. 10. 13. 13. 3. 24. 17. 20.
                                                        3∙
                                                                    FLUX 286
   20. 13. 7. 22. 10. 10. 3. 3. 13. 59. 13. 13. 10. 17. 50.
   27, 24, 20, 10, 13, 10, 23, 10, 7, 3, 7, 20, 13, 10, 17,
                                                                 17.FLUX 287
   10. 7. 17. 20. 10. 7. 32. 31. 31. 17. 10. 13. 17. 17/
                                                                    FLUX 288
   --- MAGNETIC FLUX FCR 660701 TO 661231
                                                                    FLUX 289
                                                                    FLUX 290
DATA MGFLU4 /
                                                                 17.FLUX 291
    13, 10, 10, 29, 13, 13, 10, 37, 45, 39, 22, 30, 7, 10, 22,
                                                                    FLUX 292
   26. 10. 13. 17. 29. 22. 17. 17. 10. 17. 26. 24. 13. 17. 13.
   17. 2. 20. 22. 24. 17. 13. 13. 23. 27. 29. 29. 17. 23. 13.
                                                                 10.FLUX 293
    3. 24. 35. 20. 13. 10. 37. 31. 22. 17. 13. 10. 28. 60. 37.
                                                                    FLUX 294
   37. 30. 63. 67. 28. 38. 29. 48. 34. 34. 20. 13. 10. 24. 35.
                                                                 24.FLUX 295
   23. 7. 32. 36. 24. 17. 32. 27. 28. 37. 33. 37. 32. 31.
                                                                    FLUX 296
                                                                 35.FLUX 297
        7, 10, 39, 45, 37, 22, 13, 23, 7,
                                            3. 24. 22. 10. 29.
   17. 10. 10. 10. 3. 3. 3. 26. 37. 30. 17. 13. 10. 28. 44.
                                                                    FLUX 298
  43. 29. 32. 23. 23. 20. 17. 20. 7. 23. 17. 22. 20. 3. 10.
                                                                 10.FLUX 299
   26, 27, 27, 22, 17, 7, 3, 17, 10, 24, 17, 34, 30, 41,
                                                                    FLUX 300
    32. 17. 10. 34. 35. 20. 10. 10. 7. 10. 7. 3. 35. 50. 33.
                                                                 22.FLUX 301
    23, 13, 7, 20, 27, 29, 22, 27, 29, 38, 44, 29, 20, 17,
                                                                    FLUX 302
   --- MAGNETIC FLUX FOR 670101 TC 570630
                                                                    FLUX 303
DATA MGFLUS /
                                                                    FLUX 304
    33. 20. 24. 3. 7. 17. 41. 55. 27. 10. 31. 3. 39. 55. 23.
                                                                 23.FLUX 305
  10. 13. 13. 28. 23. 10. 13. 3. 13. 10. 10. 27. 10. 7.
                                                             3.
                                                                    FEUX 306
        3. 3. 26. 30. 20. 42. 49. 22. 3. 26.
                                                3. 10. 10. 20.
                                                                 56.FLUX 307
   30. 13. 13. 13. 17. 20. 29. 10. 30. 26. 13. 10.
                                                                    FLUX 308
                                                3, 13, 13,
    13. 10. 22. 17. 26. 22. 13. 3. 27. 22.
                                             з.
                                                              з,
                                                                  7.FLUX 309
    10. 37. 39. 28. 24. 10. 10. 7. 10. 10. 33. 22. 17. 26.
                                                                    FLUX 310
                                                              7,
    33, 27, 13, 30, 26, 27, 22, 13, 13, 13, 10, 10,
                                                                 24.FLUX 311
                                                     з.
                                                         7. 10.
                                                7. 13.
    24, 20, 35, 20, 20, 33, 36, 41, 22, 7,
                                            7.
                                                        7,
                                                                    FLUX 312
    29, 39, 62, 27, 24, 17, 31, 13, 13, 20, 24, 28, 29, 24, 17,
                                                                 17.FLUX 313
    26, 20, 22, 17, 17, 7, 23, 26, 70, 72, 35, 53, 49, 48, 48,
                                                                    FLUX 314
    10. 23. 20. 28. 45. 49. 37. 30. 29. 20. 17. 13. 17. 29. 23.
                                                                 17.FLUX 315
  23. 10. 13. 10. 10. 13. 10. 10. 38. 38. 34. 24. 23. 29/
                                                                    FLUX 316
   --- MAGNETIC FLUX FOR 670701 TC 571231
                                                                    FLUX 317
DATA MGFLU6 /
                                                                    FLUX 318
    32. 20. 10. 17. 31. 22. 27. 10. 7. 7. 36. 22. 20. 20. 22.
                                                                 10.FLUX 319
    10, 20, 10, 13, 13, 7, 29, 22, 26, 17, 10, 27, 27, 32,
                                                             3∙
                                                                    FLUX 320
    10. 3. 7. 22. 22. 17. 23. 26. 20. 28. 38. 22. 17. 24. 17.
                                                                 22.FLUX 321
    34. 29. 23. 26. 17. 13. 13. 20. 29. 24. 20. 17. 22. 24. 26.
                                                                    FLUX 322
    39. 37. 17. 17. 10. 10. 23. 23. 26. 7.
                                            7, 10, 41, 29, 29,
                                                                 26,FLUX 323
   13. 27. 33. 49. 61. 24. 10. 17. 17. 10. 13. 45. 49. 45.
                                                                    FLUX 324
    24. 13. 20. 10. 20. 17. 20. 27. 33. 44. 28. 34. 23. 28. 22. 13. TLUX 325
    24, 20, 10, 7, 2, 17, 22, 10, 7, 7, 24, 39, 39, 30, 20, FLUX 326
7, 24, 37, 23, 26, 10, 7, 33, 24, 10, 32, 37, 32, 26, 24, 23, FLUX 327
         7. 7. 3. 13. 28. 22. 35. 25. 23. 22. 32. 30. 28.
                                                                    FLUX 328
    44. 33. 22. 20. 28. 36. 35. 39. 24. 17. 7. 17. 13. 10. 24. 22.FLUX 329
    26, 34, 42, 43, 31, 30, 31, 3, 7, 20, 23, 13, 17, 23, 54/
                                                                    FLUX 330
   --- MAGNETIC FLUX FOR 680101 TC 580630
                                                                    FLUX 331
 DATA MGFLU7 /
                                                                    FLUX 332
    39, 45, 23, 20, 24, 31, 22, 17, 7, 13, 24, 28, 23, 27, 24,
                                                                 28.FLUX 333
    28, 24, 28, 30, 22, 23, 24, 24, 10, 28, 23, 29, 31, 26, 22,
                                                                    FLUX 334
    24. 34. 31. 32. 22. 3. 10. 29. 34. 45. 51. 29. 33. 13. 39. 29. FLUX 335
```

```
33, 38, 27, 45, 38, 24, 13, 20, 10, 10, 22, 42, 33,
                                                                         FLUX 336
    24. 23, 29, 31, 32, 20, 13, 10, 23, 30, 22, 22, 13, 37, 41,
                                                                      39:FLUX 337
    27, 27, 26, 35, 20, 13, 23, 37, 34, 29, 31, 27, 29, 40,
                                                                         FLUX 338
                                                                 31,
    39. 27. 28. 23. 44. 45. 26. 7. 3. 17. 24. 26. 37. 39.
                                                                      29.FLUX 339
                                                                 29.
    24. 22. 7. 3. 10. 22. 27. 22. 13. 39. 35. 31. 29. 20.
                                                                         FLUX 340
    28, 29, 26, 17, 10, 7, 52, 20, 36, 24, 32, 40, 29, 26,
                                                                 23,
                                                                      26.FLUX 341
    30. 32. 26. 34. 38. 31. 28. 33. 17. 10. 10. 17. 23. 24.
                                                                 24.
                                                                         FLUX 342
    32. 32. 29. 23. 13. 13. 26. 28. 23. 45. 65. 46. 50. 39.
                                                                      28.FLUX 343
    33. 27. 29. 20. 7. 24. 17. 3. 10. 29. 26. 17. 28. 26/
                                                                         FLUX 344
   --- MAGNETIC FLUX FOR 680701 TC 631231
                                                                         FLUX 345
. DATA MOFLUS /
                                                                         FLUX 346
    24. 23, 31, 24, 22, 17, 20, 17, 10, 45, 24, 20, 57, 37, 17,
                                                                      23.FLUX 347
    17. 24. 22. 13. 23. 34. 26. 7. 20. 30. 26. 22. 13. 20. 13.
                                                                         FLUX 348
    10. 10. 27. 17. 27. 31. 28. 29. 28. 20. 17. 17. 26. 40. 37.
                                                                      47.FLUX 349
    47. 34. 24. 17. 10. 13. 26. 34. 10. 10. 13. 10. 3. 7. 29.
                                                                         FLUX 350
    23, 24, 33, 29, 27, 34, 33, 50, 27, 17, 17, 34, 48, 41, 42,
                                                                      24.FLUX 351
    17. 7, 27, 20, 28, 26, 37, 10, 3, 10, 7, 22, 23, 20,
   17. 7, 27. 20. 28. 20. 37. 10. 3. 10. 7. 22. 23. 20. 31. 50. 41. 7. 3. 17. 30. 20. 23. 17. 3. 51. 42. 29. 13. 23. 22. 26. 20. 3. 2. 7. 20. 17. 13. 17. 13. 46. 30. 67.
                                                                         FLUX 352
                                                                      13.FLUX 353
                                                                         FLUX 354
    68, 60, 45, 40, 17, 20, 32, 24, 37, 27, 27, 7, 17, 10,
    34. 37. 17. 32. 20. 13. 17. 13. 22. 20. 24. 20. 10.
                                                                      32.FLUX 355
                                                             3.
                                                                         FLUX 356
   23, 17, 33, 56, 39, 23, 13, 26, 17, 29, 17, 22, 17,
                                                             7. 17.
                                                                      22.FLUX 357
    10, 20, 27, 38, 28, 28, 29, 23, 35, 10, 28, 13, 23, 22, 26/
                                                                         FLUX 358
   --- MAGNETIC FLUX FOR 690101 TC 590630
                                                                         FLUX 359
DATA MGFLL9/
                                                                         FLUX 360
   22. 10. 2. 7. 7. 2. 23. 22. 10. 7. 10. 17. 2. 23. 28. 36. 35. 26. 26. 17. 10. 13. 27. 41. 37. 27. 13. 3. 17. 17. 7. 50. 52. 28. 24. 31. 23. 23. 10. 27. 55. 24. 24. 24. 33.
                                                                      24.FLUX 361
                                                                         FLUX 362
                                                                      26:FLUX 363
   10. 2. 22. 22. 22. 10. 23. 17. 20. 27. 43. 30.
                                                                         FLUX 364
   24. 23. 7. 17. 24. 29. 32. 26. 23. 13. 33. 47. 22. 22. 33.
                                                                      30.FLUX 365
   46. 26. 32. 37. 28. 26. 50. 60. 37. 24. 17. 17. 28. 31. 30.
                                                                         FLUX 366
   38, 31, 32, 26, 24, 26, 35, 22, 27, 17, 20, 26, 35, 31, 29,
                                                                      32.FLUX 367
   36. 30. 13. 22. 17. 24. 13. 23. 23. 17. 26. 55. 27. 40.
                                                                         FLUX 368
   22. 41. 30. 22. 24. 22. 13. 13. 26. 24. 13. 22. 47. 51. 70.
                                                                      48.FLUX 369
   29. 35. 24. 22. 28. 26. 24. 24. 20. 10. 7. 23. 13. 26. 27.
                                                                         FLUX 370
   13. 17. 13. 13. 17. 10. 22. 29. 30. 26. 22. 33. 30. 43. 22.
                                                                      33.FLUX 371
   .33. 10. 17. 24. 13. 3. 13. 27. 24. 17. 13. 10. 10. 13/
                                                                         FLUX 372
  --- HAGNETIC FLUX FOR 690701 TC 591231
                                                                         FLUX 373
DATA MGFL10/
                                                                         FLUX 374
   32. 17. 7.
                 7. 3. 10. 17. 13. 20. 20. 17. 27. 29. 28. 13.
                                                                      24.FLUX 375
        7. 3, 7, 10, 20, 13, 10, 10, 35, 49, 10, 3, 28, 17,
    7. 13. 29. 28. 20. 13. 22. 23. 26. 17. 10. 36. 20. 17. 10.
                                                                         FLUX 376
                                                                     10.FLUX 377
   17, 20, 28, 20, 17, 13, 26, 17, 10, 30, 36, 17, 10, 10, 13,
                                                                         FLUX 378
        3. 10. 10. 33. 35. 20. 34. 24. 22. 22. 10. 3. 26. 34.
                                                                      20.FLUX 379
   27, 34, 23, 22, 13, 7, 20, 17, 24, 10, 17, 50, 58, 62,
   35, 43, 33, 24, 17, 31, 17, 7, 23, 36, 24, 23, 13,
                                                                         FLUX 380
                                                             7.
                                                                  7.
                                                                      13.FLUX 381
   17. 20. 24. 13. 22. 20. 10. 29. 20. 10. 22. 17. 10.
                                                             2. 13.
                                                                        FLUX 382
    7. 26. 31. 17. 17. 7. 27. 29. 47. 46. 26. 20. 13. 3. 7. 10. 20. 10. 3. 24. 13. 17. 17. 26. 37. 23. 29. 33.
                                                                  3.
                                                                       3.FLUX 383
                                                                        FLUX 384
   13. 16. 10. 20. 33. 34. 13. 13. 27. 22. 26. 13. 7. 10. 13.
                                                                     26.FLUX 365
   10. 7. 10. 7. 7, 20. 26. 23. 23. 24. 23. 10. 10.
                                                            3.
                                                                        FLUX 386
   -- MAGNETIC FLUX. FOR 700101 TC 700630
                                                                         FLUX 387
DATA MGFL11/
                                                                         FLUX 388
   22, 42, 23, 7, 17, 13, 13, 17, 24, 17, 10, 22, 10, 17, 20,
   26. 17. 13. 20. 17. 13. 13. 20. 3. 3. 17. 13. 17. 27. 22.
                                                                     32.FLUX 389
   23. 35. 20. 27. 24. 10. 3. 3. 7. 13. 7. 7. 13. 26. 22. 13.FLUX 391
                                                                        FLUX 390
```

```
FLUX 392
      24. 23. 10. 7. 3. 3. 10. 26. 10. 24. 22. 29.
                                                                      71FLUX 393
     37. 31. 30. 31. 27. 39. 48. 73. 50. 20. 7. 17. 22.
                                                            7. 20.
                                                                       FLUX 394
      13, 17, 13, 10, 7, 3, 13, 3, 7, 13, 31, 36, 32, 31, 51,
      17: 17: 26: 24: 23: 37: 24: 27: 33: 7: 22: 17: 10:
                                                                    29.FLUX 395
                                                            7. 13.
      41. 33. 36. 36. 62. 47. 29. 31. 32. 28. 24. 13. 20. 33.
                                                                       FLUX 396
      26, 23, 24, 17, 27, 17, 17, 10, 10, 3, 7, 30, 17, 28, 24,
                                                                    17,FLUX 397
                                                                       FLUX 398
      ·24, 13, 17, 28, 22, 17, 20, 17, 20, 3, 30, 49, 28, 26, 17,
                                                                    23.FLUX 399
     . 61. 23. 26. 22. 17. 7. 23. 28. 13. 17. 10. 13. 24. 22. 28.
                                                                       FLUX 400
      28, 40, 22, 33, 32, 10, 10, 17, 17, 28, 45, 20, 17, 13/
                                                                       FLUX 401
     --- MAGNETIC FLUX FOR 700701 TC 701231
                                                                        FLUX 402
   DATA MGFL12/
      24, 26, 38, 39, 31, 30, 13, 24, 62, 44, 24, 29, 24, 23, 13,
                                                                     17.FLUX 403
                                                                        FLUX 404
      22, 13, 13, 17, 42, 27, 23, 39, 63, 36, 29, 10, 49, 20, 29,
                                                                     36.FLUX 405
      10. 17. 10. 10. 7, 22, 27, 39. 34. 20. 23. 23. 17. 10. 20.
                                                                        FLUX 406
      67, 45, 29, 10, 13, 17, 20, 10, 22, 32, 27, 27, 24, 13, 27,
      37, 33, 30, 26, 22, 13, 17, 22, 13, 17,
                                                2, 13, 38, 34, 26,
                                                                     22.FLUX 407
      22, 24, 33, 30, 37, 27, 17, 17, 22, 17, 34, 20, 13, 23,
                                                                        FLUX 408
                                                                    46.FLUX 409
      24, 23, 29, 39, 23, 17, 10, 3, 3, 20, 30, 31, 23, 22, 10,
      44, 47, 26, 20, 2, 33, 41, 29, 17, 10, 13, 30, 28, 23, 10,
                                                                       FLUX 410
      3, 10, 22, 20, 23, 27, 54, 22, 22, 32, 35, 24, 23, 20, 10,
                                                                    13.FLUX 411
                                                                        FLUX 412
      17. 33. 33. 7. 42. 33. 36. 27. 28. 22. 24. 22.
                                                        3. 2.
       2. 10. 10. 13. 22. 22. 22. 34. 17. 7. 3. 10. 10. 56. 29. 10. FLUX 413
       7, 7, 24, 22, 10, 17, 20, 29, 10, 10, 22, 33, 27, 28,
                                                                        FLUX 414
                                                                  3/
    MAGNETIC FLUX FOR 710101 TC 710630
                                                                        FLUX 415
                                                                        FLUX 416
   DATA MSFL137
                                                                     20.FLUX 417
      17, 34, 44, 31, 23, 10, 2, 0, 2, 17, 22, 7, 17, 23, 22,
      17. 30, 28. 41. 27. 24. 17. 24. 23. 3. 46. 47. 31. 39. 32.
                                                                        FLUX 418
      31. 23. 10. 10. 10. 17. 17. 24. 24. 24. 13. 17. 10. 31. 41.
                                                                     41.FLUX 419
      28, 27, 23, 22, 20, 7, 28, 28, 48, 43, 24, 17,
                                                                        FLUX 420
      10, 10, 23, 29, 13, 10, 10, 30, 17, 30, 20, 35, 47, 41, 37,
                                                                     29.FLUX 421
      23. 17. 31. 28. 7. 7. 7. 29. 27. 30. 23.
                                                        3. 23. 39.
                                                    з.
                                                                        FLUX 422
      27. 20, 31. 40. 26. 29. 17. 17. 52. 42. 40. 24. 22. 47. 45.
                                                                     30, FLUX 423
      22, 26, 22, 10, 37, 29, 24, 7, 2, 13, 22, 36, 23, 22,
                                                                        FLUX 424
      20. 32, 22, 22, 22, 51, 45, 28, 27, 26, 10, 10, 10, 29, 27,
                                                                     13.FLUX 425
       58, 47, 24, 13, 13, 13, 26, 20, 17, 23, 3, 10, 17, 34, 10,
                                                                        FLUX 426
      37, 43, 39, 23, 17, 13, 7, 20, 7, 10, 17, 7, 22, 13, 13, 24, 17, 3, 10, 10, 13, 20, 13, 43, 27, 10, 23, 37, 24/
                                                                     17.FLUX 427
                                                                        FLUX 428
----- MAGNETIC FLUX FOR 710701 TC-711231
                                                                       FLUX 429
   DATA MSFL147
                                                                        FLUX 430
      24, 25, 20, 20, 20, 23, 7, 22, 17, 3, 17, 20, 23, 22, 22,
                                                                     17.FLUX 431
       10. 20, 20, 10, 36, 22, 22, 13, 7, 32, 23, 17, 17, 22, 23,
                                                                        FLUX 432
       17, 32, 10, 20, 29, 3, 13, 26, 23, 26, 30, 24, 17, 10, 13,
                                                                     22.FLUX 433
      26, 29, 10, 10, 22, 23, 27, 20, 20, 24, 7, 17, 17, 17, 43, 24, 3, 13, 23, 29, 27, 35, 27, 20, 17, 17, 22, 32, 23, 23,
                                                                        FLUX 434
                                                                     26*FLUX 435
       28, 50, 23, 31, 13, 10, 3, 17, 40, 36, 46, 24, 17, 37,
                                                                        FLUX 436
       36, 36, 35, 29, 31, 35, 31, 37, 46, 22, 24, 23, 29, 23, 22,
                                                                     10.FLUX 437
            3. 3. 10. 13. 23. 17. 28. 17. 3. 10. 32. 40. 29. 13.
                                                                        FLUX 438
       7.
                                                             2.
           7. 7. 17. 13. 7. 20. 22. 10. 13. 31. 23. 7.
       17.
                                                                  з,
                                                                      3.FLUX 439
       2, 20, 20, 17, 26, 43, 49, 45, 48, 34, 22, 24, 13, 13,
                                                                        FLUX 440
       17, 13, 27, 22, 13, 7, 2, 7, 20, 7, 17, 23, 28,
                                                             7.
                                                                  7.
                                                                     22.FLUX 441
       57. 37. 26. 7. 24. 34. 27. 20. 17. 27. 10. 10. 30. 31.
                                                                 20/
                                                                        FLUX 442
     ---- MAGNETIC FLUX FOR 720101 TC 720630
                                                                        FLUX 443
   DATA MOFLIS/
                                                                        FLUX 444
       20. 22. 17. 24. 17. 3. 10. 10. 13. 20. 30. 17. 10. 7. 34.
                                                                     41.FLUX 445
       35, 34, 26, 22, 37, 39, 43, 24, 32, 37, 30, 37, 29, 23, 20,
                                                                      FLUX 446
      17. 26. 20. 21. 15. 14. 18. 15. 9. 23. 17. 9. 32. 28. 26. 20. FLUX 447
```

```
23. 20. 24. 24. 22. 11. 16. 41. 30. 14. 11. 14.
                                                                      FLUX 448
                                                       4.
     19, 23, 30, 19, 13, 24, 46, 23, 23, 7, 14,
                                                  8, 17, 10, 13, 31, FLUX 449
     30, 22, 12, 13, 13, 21, 19, 33, 20, 23, 32, 19, 34, 38, 28,
                                                                      FLUX 450
     29. 18. 8. 30. 28. 17. 20. 14. 5. 14. 14. 23. 25. 18. 17. 14. FLUX 451
                                                                      FLUX 452
     15. 37. 20. 18. 30. 17. 20. 12. 7. 5. 14. 33. 47. 29.
     22. 32. 18. 14. 15. 22. 8. 9. 28. 23. 19. 22. 18. 18. 27. 25. FLUX 453
     22. 21. 8. 10. 10. 14. 16. 11. 14. 20. 18. 33. 23. 28. 26.
                                                                      FLUX 454
     14. 17. 25. 27. 25. 15. 19. 15. 10. 10. 8. 7. 11. 21. 23. 20. FLUX 455
     48. 66. 29. 18. 13. 25. 25. 26. 15. 21. 29. 27. 25. 7/
                                                                      FLUX 456
    ---- MAGNETIC FLUX FOR 720701 TC 721231
                                                                      FLUX 457
   DATA MGFL16/
                                                                      FLUX 458
  · 31 *14 •1 53 *0/
                                                                      FLUX 459
----- MAGIETIC FLUX FOR 730101 TC 730630
                                                                      FLUX 460
   DATA MGFL17/
                                                                      FLUX 461
  . 181*0/
                                                                      FLUX 462
                                                                      FLUX 463
 ----- MAGNETIC FLUX FOR 730701 TC 731231
   DATA MGFL18/
                                                                      FLUX 464
      1 64*C/
                                                                      FLUX 465
  CALL FLUXS(NARCS, MFLUX, NFLUXS)
                                                                      FLUX 466
FTT DATE OF LAST MAGNETIC FLUX VALUE
                                        720630
                                                                      FLUX 467
   RE TURN
                                                                      FLUX 468
   END
                                                                      FLUX 469
```

FLUXS

DESCRIPTION

FLUXS stores in half-word integers ten times the daily 10.7 cm. flux line observed at Ottawa and adjusted to one A.U.

FLUXS tables must be updated using the values obtained from bulletins printed by E.S.S.A., Boulder, Colorado. An example of the bulletin is given on the following page.

DAILY SOLAR INDICES

JUNE 1972

1
J
V

JCN.	YEAR	SARTELS 27-DAY	SUNSPOT	NULLBERS	OBSERVED FLUX				SOLAR FL	IX ADJUSTED	TO 1 A.U.			
1972	CZA	CYCLE HUHBER	RZ	R _A ,	01 TAWA 2300	AFCRL 15400	AFCRL 8800	AFCRL 4985	01TAYA 2800	. AFCRL 2695	AFCRL 1415	AFCRL 606	AFCRL 410	AFCRL 245
1	153	3	78	75	124.6	534	281	: 63	128.2	117.9	76.3	53-1	24.7	10.5
2	154	4	96	86	126.3	54	237	163 162	130.0	126.0	78.7	54.4	25.2	10.9
3.	155	5	103	100	133.6*	54	293	369	137.5*	135.3	86.7	59.6	23.1 29.8	11.6
5	153 - 157	7	116 132	121	145.3° 160.0	54 54	300	164 203	149.5° 164.8	146.4	90.3 98.3	60.9 65.3	29.3	10.9
6	158	8	103	115	154.5	54	301	194	159.1	150.9	96.1	61.9	28.8	10.9
7	159	9	95	99	143.3	54	300	194	152.7	145.4	91-0	63.2	28.8	10.7
e	150	10	ε7	90	145.80	. 54	310	199	150.25	143.2	94+0	62.2	30.6	11.5
9	151.	11	7,5	79	144.6*	55	311	197	149.19	143.6	95.1 83.9	62.0 59.6	28.4 28.4	11.6
10	162	12	58	65	135.3	55	302	185	139.5	133•5	80.9	37.6	20.4	1,,,
		1,,	63 .	41.	139.60	54	301	186	143.29	143.1	94.5	64.4	29.0	12.2
11	163 164	13	48	38	145.2	55	300	183	149.7	143.0	93+3	64.2	29.3	11.5
12	165	15	43	45	134.62	54	590	174	133.9*	133.7	90.9	63.7	23.9	11.8
9 14 9 14	166	16	60	56	132.3	53	273	167	135.5	132.0	89.9	63.5	30.1	11.8
15	167	17.	88	96	135.20	55	293	195	139.5*	154.4	101.0	66.3	32.9	21.3
ų.						_			142.70	134.5	87.9	61.9	2846	14-0
9 16 5 17 9 18	168	18	98	95	130.3*	54 54	281	176 177	142.1	139.5	93.6	62-1	30.3	11.8
\mathfrak{T}^{17}	159	19	101	96 84	145.0	54 54	231	173	149.00	145.2	95.8	61.9	31.0	15.9
418	170	51	83 -	60	133.60	53	277	173	143.20	160.0	93.6.	-59.8	23.2	11.9
19 - 20	172	55	92	88	137.9	53	272	168	142.5	133.5	86.5	82.6	53.2	51.4
1 2,	173	23	96.	93	134.6*	53	279	171	139.00	137.0	86.7	70.0	43.1	25.8
21	174	2.3	87	97	130.8	54	279	169	135-1	131-1	86.6	58.5	31.3	14.6
23.	175	25	84	84	126.5	54	271	166	130.7	127.1	83.6	55.5	29.4	12.2
24	176	26	79	80	124.4	54	271	162	128.5	121.8	82.9	56.4	20.4	13.3
25	177	27	77	74	121.5	53	270	159	125.5	118.9	80.6	55.1	23.9	11.1
-						54	265	155	120.8	114.1	83.1	54-1	27.4	10.5
26	178	1	73	71	116.8	53	265	156	121.95	119.0	82.3	54.2	27.6	10.9
27	179	2	66 78	63	123.1	54	269	160	127.3	124.5	81.3	55.2	27.8	10.5
28	180	3 4	73	. 70	123.0	53	269	163	132.4	127.2	82.3	55.9	27.4	10.9
29 30	531	5	73	66	133.1	53	269	164	134.5	127.2	88.9	58.6	50.5	10.8
REAN	<u> </u>		83.4	81.7	135.4	54	284	175	139.7	134.9	88.8	60.9	30.3	14.0

() -F

FLUXS Page 2 of 17 October 1972

```
NAME
                  FLUXS
PURPOSE
                  STORES SOLAR FLUX DATA THROUTH FEB. 1972
                  CALL FLUXS(NARCS.MFLUX.NFLUXS).
CALLING SEQUENCE
  SYMPICE
         . TYPE
                  DESCRIPTION
                   INPUT - NUMBER OF ARCS
  NARCS
   MFLUX
                   INPUT - MAGNETIC FLUX ARRAY
    (1)
                   INPUT - NUMBER OF SCLAP FLUX VALUES IN ARRAY
   NFLUXS
SUBROUT INES USED
                  ADFLUX
COMMON BLOCKS
                  NONE
INPUT FILES
                  NONE
                                           REPRODUCIBILITY OF THE
   OUTPUT FILES
                  NONE
                  E.S.S.A. BOULDER, COLO. ORIGINAL PAGE IS POOR
REFERENCES
                   *GEODYN SYSTEMS DESCRIPTION!
```

```
SUBROUTINE FLUXS (NARCS, MFLUX, NFLUXS)
                                                                              31
INTEGER BEGYMD, ENDYMO
                                                                       FLUX
                                                                              32
INTEGEP#2 SFLUX. MELUX
                                                                       FLUX
                                                                              33
DIMENSION SELUX(5785) MELUX(1)
                                                                       FLUX
                                                                              34
 INTEGER # 2
                              SFL01(61), SFL02(123), SFL03(122),
                                                                       FLUX
                                                                              35
    SFL0:(120), SFL0:5(123), SFL0:5(122), SFL0:7(121), SFL1:8(123),
                                                                              36
                                                                       FLUX
    SFL09(122), SFL10(120), SFL11(123), SFL12(122), SFL13(120),
                                                                       FLUX
                                                                              77
    SFL14(123), SFL15(122), SFL16(120), SFL17(123), SFL18(122),
                                                                       FLUX
                                                                              7 2
    SFL19(121), SFL20(123), SFL21(122),
                                                                              30
                                                                       FLUX
                              SFLUX1(120) - SFLUX2(123) - SFLUX3(122) -
                                                                       FLUX
                                                                              40
    SFLUX4(120).SFLUX5(123).SFLUX6(122).SFLUX7(120).SFLUX8(123).
                                                                       FLUX
                                                                              41
    SFLUX9(122).SF_U10(121).5FLU11(123).SFLU12(122).SFLU13(122).
                                                                       FLUX
                                                                              42
    SFLU14(123)+SFLU15(122)+SFLU16(120)+SFLU17(123)+SFLU1A(122)+
                                                                       FLUX
    $FLU19(120).$FLU20(123).$FLU21(122).$FLU22(121).$FLU23(123).
                                                                       FLUX
    SFLU24(122).SFLU25(120).SFLU26(123).SFLU27(122)
                                                                        FLUX
                                                                              45
 EQUIVALENCE
                                                                        FLUX
(SFLUX())
            ). SFL31(1)).(SFLUX(62 ). SFL32(1)).
                                                                        FLUX
                                                                              47
(SFLUX(185 ), SFL03(1)),(SFL0X(307 ), GFL04(1)),
                                                                        FLUX
.(SFLUX(427 ). SFL05(/F)).(SFLUX(550 ). SFL06(1)).
                                                                              40
                                                                       FLUX
.(SFLUX(672 ). SFLO7(1)),(SFLUX(793 ). SFLOR(1)).
                                                                        FLUX
                                                                              < C
.(SFLUX(916 ). SFL39(1)),(SFLUX(1039).
                                         36616(11).
                                                                              5 1
                                                                        FLUX
.(SFLUX(1158). SFL11(1)).(SFLUX(1201). STL12(1)).
                                                                        FLUX
                                                                              5,2
(SFLUX(1403), SFL13(11),(SFLUX(1323), SFL1-(11)).
                                                                              ~ 7
                                                                        FLUX
•(SFLUX(1646). SFLIS(1)).(SFLUX(1768). SFLI6(11).
                                                                        FLUX
                                                                              54
.(SFEUX(1993), SFE17(1)),(SFEUX(2011), SFE18(1)),
                                                                        FLUX
                                                                              5 5
```

```
FLUX
   ..(SFLUX(2133), SFL19(1)),(SFLUX(2254), SFL20(1)),
                                                                               57
                                                                         FLUX
    (SFLUX(2377), SFL21(1)), (SFLUX(2499), SFLUX1(1)),
                                                                               50
                                                                         FLUX
    •(SFLUX(2519).SFLUX2(1)).(SFLUX(2742).SFLUX3(1))
                                                                         FLUX
     EQUIVALENCE
                                                                         FLUX
                                                                               ۴Ç
    .(SFLUX(2964).SFLUX4(1)).(SFLUX(2984).SFLUX5(1)).
                                                                               61
                                                                         FLUX
    .(SFLUX(3107).SFLUX6(1)).(SFLUX(3229).SFLUX7(1)).
                                                                         FLUX
                                                                               62
    • (SFLUX(3349) • SFLUX8(1)) • (SFLUX(3472) • SFLUX9(1)) • -
                                                                               63
                                                                         FLUX
    •(SFLUX(3594).SFLU10(1)).(SFLUX(3715).SFLU11(1)).
                                                                               £ 4
                                                                         FLUX
    •(SFLUX(3333).SFLU12(1)).(SFLUX(3960).STLU13(1)).
                                                                               65
                                                                         FLUX
    .(SELUX(4080).SELU14(11).(SELUX(4207).SELU15(1)).
                                                                         FLUX
                                                                               64
    *(SFLUX(4325) *SFLU16(1)) *(SFLUX(4445) * SFLU17(1)) *
                                                                         FLUX
                                                                               67
     •(SFLUX(4568).SFLU18(1)).(SFLUX(4690).SFLU19(1)).
                                                                               69
                                                                         FLUX
     •(SFLUX(4910).SFLU20(1)).(SFLUX(4933).SFLU21(1)).
                                                                               60
                                                                         FLUX
     •(SFLUX(5)55),SFLU22(1)),(SFLUX(5176),SFLU23(1)),
                                                                                70
                                                                         FLUX
   . .(SFLUX(5299),SFLU24(1)),(SFLUX(5421),SFLU25(1)),
                                                                                71
                                                                         FLUX
     •(SFLUX(5541),SFLU26(1)),(SFLUX(5664),SFLU27(1))
                                                                         FLUX
                                                                                72
      DATA 956YMD.ENDYMD/580301.720731/
                                                                          FLUX
                                                                               73
74
                                                                          FLUX
      DATA SFL01/
                                                                                75
     · 1950. 2090. 2230. 2320. 2330. 2510. 2560. 2510. 2550. 2420.
                                                                          FLUX
                                                                                74
     · 2350, 2320, 2380, 2270, 2170, 2140, 2080, 2100, 2300, 2320,
                                                                          FLUX
                                                                                77
    . 2240, 2560, 2680, 2740, 2580, 2840, 3020, 2950, 3320, 3440,
                                                                          FLUX
                                                                                7.6
                                                                          FLUX
     3380
                                                                          FLUX
                                                                                70
     · 3310, 3260, 3020, 2950, 2900, 2890, 2930, 2720, 2500, 2440,
     · 2160, 1950, 1790, 1770, 1880, 1970, 2070, 2130, 2210, 2260.
                                                                                83
                                                                          FLUX
     . 2290. 2370. 2350. 2440. 2480. 2450. 2+70. 2580. 2550. 2650/
                                                                                2 1
                                                                          FLUX
                                                                          FLUX
                                                                                82
C----- SOLAR FLUX FOR 530501 TD 580831
                                                                          FLUX
                                                                                23
      DATA SFL02/
     · 2660, 2760, 2780, 2800, 2690, 2630, 2490, 2360, 2390, 2090,
                                                                          FLUX
                                                                                PA
     · 2110, 2390, 2030, 1940, 1960, 1940, 1940, 1970, 1970, 1970,
                                                                          FLUX
                                                                                25
     · 1990. 1990. 2060. 2110. 2070. 2100. 2010. 2000. 2190. 2130.
                                                                          FLHX
                                                                                26
                                                                          FLUX
                                                                                R7
                                                                                E a
     · 2190, 2200, 2270, 2461, 2560, 2600, 2350, 2330, 2520, 2340;
                                                                          FLUY
                                                                          FLUX
     · 2350. 2270. 2200. 2080. 1970. 1910. 1920. 1770. 1890. 1930.
     · 1940, 2130, 2170, 2210, 2260, 2330, 2370, 2320, 2200, 2170,
                                                                         FLUX
                                                                                00
                                                                                Cį
     · .2150, 2150, 2240, 2320, 2380, 2320, 2370, 2320, 2180, 2050,
                                                                          FLUX
     . 2030. 1880. 1910. 1820. 1810. 1920. 1880. 1960. 2550. 2000.
                                                                          FLUX
                                                                                92
    . 2090. 2140. 2130. 2280. 2400. 2600. 2610. 2900. 2850. 2870.
                                                                                Ç 3
                                                                          FLUX
                                                                          FLUX
                                                                                CA
     · 2880 ·
    . • 2740 · 2540 · 2370 · 2160 · 2210 · 2390 · 2350 · 2360 · 2250 · 2220 ·
                                                                          FLUX
                                                                                05
     · 2250, 2220, 2360, 2350, 2310, 2150, 2110, 2180, 2190, 2200,
                                                                                94
                                                                          FLUX
                                                                                ¢ 7
      · 2310. 2390. 2430. 2530. 2630. 2640. 2520. 2440. 2520. 2490.
                                                                          FLUX
                                                                                C B
                                                                          FLUX
      . 2590/
                                                                                00
                                                                          FLUX
C----- SOLAR FLUX FOR 680901 TO 581231
                                                                          FLUX .100
     DATA SELS3/
      · 2610, 2610, 2700, 2560, 2330, 2160, 2100, 2110, 2350, 2450,
                                                                          FLUX 101
      · 2500, 2700, 2850, 2900, 2710, 2630, 2590, 2460, 2430, 2310,
                                                                          FLUX 103
      · 2210, 2490, 2260, 2260, 2220, 2180, 2190, 2250, 2270, 2280,
                                                                          FUUX 103
      · 2310. 2210. 2190. 2150. 1990. 1890. 1970. 1970. 1920. 1980.
                                                                          FLUX 104
      . 2100. 2190. 2250. 2280. 2300. 2530. 2560. 2860. 2960. 2760.
                                                                          FLUX 105
      . 2770. 2700. 2400. 2270. 1910. 1940. 1910. 2090. 2200. 2290.
                                                                          FLUX 106
                                                                          FLUX 107
      . 2220.
      · 2340. 2410. 2240. 2200. 2220. 3040. 2760. 1910. 1900. 1690.
                                                                          FLUX 103
      . 1660. 1560. 1630. 1660. 1660. 1690. 1730. 1749. 1830. 1879.
                                                                          FLUY 100
      · 1041, 2000, 2130, 229), 2430, 2740, 2590, 2590, 2530, 2540,
                                                                           FLUX 110
      · 2690. 2590. 2410. 2410. 2530. 2490. 2530. 2690. 2540. 2690.
                                                                           FLUX 111
```

```
· 2560, 2570, 2600, 2580, 2350, 2170, 2040, 2020, 1970, 1990,
                                                                           FLUX 112
     · 1980. 2110, 2150. 2240. 2310. 2380. 2270. 2230, 2190. 2240.
                                                                           FLUX 113
                                                                           FLUX 114
     • 2260/
                                                                           FLUX 115
C----- SOLAR FLUX FOR 590101 TO 590430
                                                                           FLUX 116
      DATA SFL34/
     · 2350. 2500. 2660. 2700. 2820. 2940. 3060. 2780. 2680. 2820.
                                                                           FLUX 117
     . 2603, 2510, 2350, 2240, 2070, 2130, 2200, 2370, 2650, 2940, 3150, 3370, 3280, 3340, 3210, 3140, 3220, 3040, 2620, 2240,
                                                                           FLUX 118
                                                                           FLUX 119
                                                                           FLUX 120
     . 2140.
     · 2050, 2050, 2040, 2010, 1910, 1950, 1920, 1820, 1740, 1900,
                                                                           FLUX 121
     · 1990, 1990, 2010, 1993, 2130, 2140, 2200, 2120, 2180, 2280,
                                                                           FLUX 122
                                                                           FLUX 123
     · 2240, 2190, 2120, 2200, 2270, 2190, 2110, 2010,
     · 1870: 1810: 1810: 1780: 1790: 1900: 1880: 1910: 1980: 2040:
                                                                           FLUX 124
     · 2010 · 1940 · 2073 · 2150 · 2350 · 2460 · 2590 · 2743 · 2010 · 2850 ·
                                                                           FLUX 125
                                                                           FLUX 126
     · 2870 · 2520 · 2580 · 2470 · 2480 · 2470 · 2460 · 2490 · 2450 · 2580 ·
                                                                            FLUX 127
     . 2540 .
                                                                            FLUX 129
     · 2560, 2360, 2160, 2150, 1960, 1960, 2170, 2150, 2150, 2200,
    ·• 2320, 2240, 2090, 1980, 1890, 1880, 1900, 1810, 1960, 2030,
                                                                            FLUX 129
     . 2030, 1990, 2130, 2130, 2110, 2180, 2120, 2160, 2110, 2200/
                                                                            FLUX 130
                                                                            FLUX 131
C----------- SOLAR FLUX FOR 590501 TO 590831
                                                                            FLUX 132
      DATA SFLC5/
     . 2040, 1940, 1950, 1840, 1860, 2020, 2080, 2440, 2490, 2590,
                                                                            FLUX 133
     · 2640, 2660, 2640, 2440, 2280, 2220, 2240, 2130, 1990, 2010,
                                                                            FLUX 134.
                                                                            FLUX 135
      · 2010. 2010. 1980. 1990. 2030. 2050. 2080. 1950. 1760. 1770.
                                                                            FLUX 136
     . 1790.
     . 1930, 1980, 1980, 1960, 1970, 2100, 1980, 2130, 2230, 2290,
                                                                            FLUX 137
     . 2260: 2200: 2120: 2080: 2250: 2250: 2250: 2370: 2260:
                                                                            FLUX 138
      · 2280. 2190. 2200. 2320. 2330. 2380. 2400. 2240. 2190. 1950.
                                                                            FEUX 139
                                                                            FLUX 140
      · 1880. 1740. 1710. 1770. 1760. 1880. 1920. 1850. 1950. 2010.
                                                                            FLUX 141
      · 1940. 2340. 2430. 2640. 2450. 2610. 2400. 2310. 2220. 2080.
                                                                            FLUX 142
     · 1890, 1780, 1780, 1810, 1820, 1820, 2000, 2050, 2070, 2040,
                                                                            FLUX 143
                                                                            FLUX 144
      . 2080.
      · 2140. 2290, 2400. 2360, 2290. 2270. 2120. 2040. 2040. 2020.
                                                                            FLUX 145
                                                                            FLUX 146
      · 2000, 1960, 1940, 1890, 1900, 2010, 2240, 2290, 2150, 2240,
      · 2300. 2430. 2620. 2450. 2530. 2570. 2790. 3020. 3080. 3120.
                                                                            FLUX 147
                                                                            FLUX 148
      . 3050/
                                                                            FLUX 149
C----- SOLAR FLUX FOR 590901 TO 591231
                                                                            FLUX 150
       DATA SELDG/
    . 2820. 2590. 2570. 2390. 2200. 2000. 1920. 1990. 2090. 2010.
                                                                            FLUX 151
      · 2030, 1950, 1890, 1960, 1840, 1680, 1700, 1670, 1750, 1850,
                                                                            FLUX 152
      . 1820. 1980. 1820. 1830. 1750. 1640. 1630. 1620. 1590. 1560.
                                                                            FLUX -153
      . 1500. 1350. 1440. 1480. 1550. 1740. 1590. 1550. 1530. 1490.
                                                                            FLUX 154
      · 1470. 1540. 1550. 1530. 1600. 1670. 1690. 1710. 1730. 1750. .
                                                                            FLUX 155
      · 1750, 1870, 1830, 1810, 1860, 1900, 1830, 1770, 1720, 1670,
                                                                            FLUX 156
                                                                            FLUX 157
      . 1610.
      . 1590. 1580. 1650. 1540. 1510. 1570. 1510. 1750. 1830. 1940.
                                                                            FEUX 158
      · 1930, 1920, 1910, 1870, 1820, 1750, 1610, 1550, 1570, 1540,
                                                                            FLUX 150
      • 1540. 1730. 1870. 2060. 2240. 2210. 2150. 2270. 2250. 2300.
                                                                            FEUX 150
      · 2220, 2170, 2025, 1950, 2040, 2020, 1910, 1930, 1730, 1740,
                                                                            FLUX 161
      . 1710. 1575, 1620, 1650. 1710. 1640. 1670. 1600. 1800. 1790.
                                                                            FLUX 142
      · 1650 · 1710 · 1650 · 1630 · 1620 · 1610 · 1670 · 1720 · 1710 · 1790 ·
                                                                            FLUX 3.53
                                                                            FLUX 164
      . 1670/
 C----- SOLAR FLUX FOR 600101 TO 600430
                                                                            FLUX 165
                                                                            FLUX 166
       DATA SELO7/
      · 1710. 1740. 1920. 1920. 2130. 2150. 2740. 2190. 2010. 1940.
                                                                             FLUX 167
```

```
FLUX 168
     • 2000. 1840. 1780. 1760. 1830. 1930. 1790. 1760. 1640. 1570.
                                                                         FLUX 169
    · 1620, 1720, 1880, 2100, 2300, 2420, 2480, 2520, 2370, 2300,
                                                                         FLUX 170
     . 2240.
                                                                         FLUX 171
     · 2250. 2130. 2150. 2090. 2090. 1920. 1870. 1830. 1830. 1780.
                                                                         FLUX 172
     · 1750, 1560, 1670, 1670, 1600, 1580, 1530, 1510, 1470, 1420,
                                                                         FLUX 173
     · 1560 · 1490 · 1430 · 1400 · 1470 · 1470 · 1470 · 1400 · 1400 ·
                                                                         FLUX 174
     • 1370, 1370, 1380, 1390, 1400, 1350, 1390, 1410, 1430, 1320,
     • 1320. 1290. 1350. 1340. 1370. 1420. 1400. 1330. 1370. 1430.
                                                                         FLUX 175
                                                                         FLUX 176
     · 1450 · 1500 · 1540 · 1560 · 1570 · 1660 · 1650 · 1750 · 1810 · 1930 ·
                                                                         FLUX 177
    .. 1820.
     · 2010 · 1840 · 1790 · 1880 · 1820 · 1690 · 1650 · 1470 · 1480 · 1560 ·
                                                                          FLUX 178
                                                                          FLUX 179
     · 1590. 1580. 1790. 1830. 1900. 1830. 1780. 1760. 1700. 1750.
     • 1630, 1500, 1660, 1650, 1470, 1430, 1400, 1420, 1530, 1610/
                                                                         FLUX 180
                                                                          FLUX 181
C----- SOLAR FLUX FOR 600501 TO 600831
                                                                          FLUX 192
      DATA SFLOS/
                                                                          FLUX 183
     • 1520, 1500, 1580, 1560, 1520, 1560, 1620, 1680, 1700, 1700,
     • 1800 · 1790 · 1700 · 1620 · 1620 · 1550 · 1510 · 1530 · 1530 · 1600 ·
                                                                          FLUX 194
     . 1640. 1540. 1630. 1640. 1630. 1580. 1650. 1710. 1700. 1700.
                                                                          FLUX 185
                                                                          FLUX 196
     . 1590.
     . 1660. 1570. 1670. 1720. 1700. 1750. 1850. 1850. 1810. 1780.
                                                                          FLUX 187
     . 1710. 1670. 1620. 1660. 1660. 1570. 1530. 1390. 1400. 133C.
                                                                          FLUX 188
     • 1310, 1300, 1360, 1320, 1400, 1550, 1640, 1840, 1900, 1940,
                                                                          FLUX 189
     . 2080. 2070, 2100. 2120, 2090. 2000. 1970. 1760. 1760. 1650.
                                                                          FLUX 190
     · 1530. 1420. 1350. 1350. 1460. 1440. 1530. 1590. 1560. 1520.
                                                                          FLUX 191
    . 1530, 1480, 1510, 1590, 1480, 1490, 1500, 1490, 1540, 1460,
                                                                          FLUX 192
                                                                          FLUX 193
     . 1450.
                                                                         JELUX 194
     m 1400. 1340. 1250. 1220. 1260. 1270. 1340. 1450. 1520. 1500.
     · 1870, 2140, 2340, 2380, 2460, 2410, 2470, 2500, 2340, 2190,
                                                                         FLUX 195
                                                                          FLUX 196
     · 2010, 1990, 1710, 1620, 1580, 1620, 1500, 1400, 1290, 1290,
                                                                          FLUX 197
     . 1320/
                                                                         FLUX 193
C----- SOLAR FLUX FOR 600901 TO 601231
                                                                          FLUX 199
      DATA SFL09/
     . 1370, 1520, 1490, 1423, 1420, 1490, 1620, 1700, 1730, 1750.
                                                                          FLUX 200
     .. 1750. 1770, 1810. 1810. 1780. 1770. 1850. 1900. 1990. 1950.
                                                                          FLUX 201
     · 1890, 1840, 1750, 1620, 1550, 1480, 1420, 1320, 1240, 1210,
                                                                          FLUX 202
     · 1150, 1120, 1200, 1320, 1320, 1320, 1440, 1430, 1510, 1590,
                                                                          FLUX 203
     • 1520. 1590. 1620. 1660. 1650. 1650. 1670. 1540. 1530. 1490.
                                                                          FLUX 204
     · 1440. 1410. 1340. 1250. 1300. 1320. 1320. 1220. 1310. 1280.
                                                                          FLUX 205
     . 1270.
                                                                          FLUX 206
     1240, 1290, 1300, 1310, 1440, 1480, 1570, 1680, 1750, 2000,
                                                                          FLUX 207

    1880, 1630, 1800, 1920, 1330, 1740, 1640, 1530, 1500, 1470,

                                                                          FLUX 208
    • 1390, 1270, 1160, 1130, 1110, 1170, 1190, 1170, 1190, 1310,
                                                                          FLUX 209
     • 1360, 1450, 1520, 1630, 1590, 1610, 1520, 1540, 1500, 1510,
                                                                          FLUX 210
                                                                          FLUX 211
     • 1440. 1400. 1360. 1320. 1380. 1340. 1250. 1180. 1150. 1190.
     · 1160, 1360, 1030, 1060, 1110, 1160, 1250, 1360, 1450, 1590,
                                                                          FLUX 212
     . 1630/
                                                                          FLUX 213
C----- SOLAR FLUX FOR 610101 TO 610430
                                                                          FLUX 214
                                                                          FLUX 215
      DATA SFLIG/
     • 1640, 1760, 1750, 1650, 1600, 1430, 1320, 1250, 1220, 1150,
                                                                          FLUX 215
     . 1:00, 1:30, 960, 960, 970, 1000, 1020, 1030, 1020, 1020,
                                                                          FLUX 217
     . 1040, 1020, 1000, 1030, 1030, 1080, 1090, 1250, 1320, 1290,
                                                                          FLUX 218
                                                                          FLUX 219
     . 1230, 1220, 1180, 1180, 1180, 1210, 1140, 1110, 1080, 1040,
                                                                          FEUX 220
     . 1010. 980. 970. 970. 980.
                                            960. 960.
                                      960,
                                                                          FLUX 221
     . 1000, 1020, 1030, 1040, 1050, 1010, 1030, 1030,
                                                                          FLUX 222
     · 1030, 1030, 1040, 961, 940,
                                      930.
                                            950. 940.
                                                                          FLUX 223
```

```
FLUX 224
                                     990. 980. 1010. 1020. 1050.
      980, 920, 930, 910, 980,
   . . 1050, 1060, 1100, 1160, 1180, 1210, 1250, 1260, 1260, 1250,
                                                                         FLUX 225
                                                                         FLUX 226
                                                                         FLUX 227
     • 1130, 1050, 1010, 1030, 1070, 1060, 980, 1040, 960, 930,
                                                                         FLUX 229
       920, 890, 880, 930, 980, 1030, 1050, 1070, 1050, 1030,
                                                                         FLUX 228
     • 1040, 1030, 1050, 1110, 1110, 1260, 1200, 1140, 1210, 1220/
                                                                         FLUX 230
C----- SOLAR FLUX FOR 610501 TO 610831
                                                                         FLUX 231
    DATA SFL11/
                                            970,
                                                  940: 960: 920:
                                                                         FLUX 232
     . 1250, 1190, 1110, 1040, 1030,
                                      970.
                                            BAD.
                                                  950. 1000. 1050.
                                                                         FLUX 233
        980. 1010. 970. 930. 910.
                                      880.
                                                                         FLUX 224
                                      880.
                                            950.
                                                  910. 910.
     · 1100, 1090, 1100, 1080, 1060,
                                                                         FLUX 235
        880 .
                                                                         FLUX 236
                                      880,
                                           390. 910. 1000. 1020.
              380, 920, 890.
                               860.
                                                                         FLUX 237
     · 1100 · 1080 · 1140 · 1230 · 1290 · 1320 · 1370 · 1360 · 1310 · 1310 ·
                                                                         FLUX 233
     . 1320, 1340, 1350, 1170, 1110, 1080, 990, 950, 1020, 1030,
                                                                         FLUX 239
     · 1040, 990, 1040, 1030, 1060, 1020, 1050, 1070, 1120, 1240,
                                                                         FLUX 240

    1380, 1370, 1410, 1360, 1360, 1320, 1370, 1310, 1260, 1230,

     · 1180, 1190, 1180, 1180, 1170, 1150, 1110, 1050, 1030, 920,
                                                                         FLUX 241
                                                                         FLUX 342
       910.
                                                                         FLUX 343
                               900.
                                      920. 990. 1050. 1130. 1220.
        900.
              870. 910. 883.
                                                                         FLUX 244
     · 1300, 1280, 1280, 1270, 1230, 1190, 1190, 1160, 1130, 1090,
     . 1040, 1030, 980, 970, 930, 950, 950, 1000, 1030, 1060,
                                                                         FLUX 245
                                                                         FLUX 745
     . 1080/
                                                                         FLUX 247
C----- SOLAR FLUX FOR 610901 TO 611231
                                                                         FLUX 248
    DATA SFL12/
                                                                         FLUX 249
     · 1100, 1100, 1170, 1180, 1140, 1120, 1150, 1170, 1260, 1300,
     . 1270. 1300. 1300. 1370. 1350. 1330. 1240. 1150. 1380. 1010.
                                                                        JELUX REC
       960. 920. 900. 970. 970.
                                                  960. 1020. 1000.
                                                                         FLUX ?51
                                      980.
                                            960.
             970, 970, 1020, 1080, 1010,
                                            990.
                                                  980. 1070. 1060.
                                                                         FLUX REE
     • . 9,80 •
     • 1070 • 1110 • 1110 • 1050 • 1060 • 1000 •
                                                                         FLUX 253
                                            270.
                                                  950.
                                                        950. 930.
                               830.
                                            840.
                                                  860.
                                                        850.
                                                              870 .
                                                                         FLUX 254
             890. 850. 850.
                                      830.
        920 •
                                                                         FLUX 255
        B60 .
                                                                         FLUX 256
              .015 .CE8
                          8 20 .
                                870.
                                      870 . 930.
                                                  000
                                                         980. 1010.
        860.
                                            530 +
                                                                         FLUX 257
                                800.
                                      860.
                                                  790.
                                                         770. BOC.
                    910.
                          860+
        990,
              940.
                                                                         FLUX 35°
                                920,
                                      930.
                                            950.
                                                   980.
                                                         980. 1040.
              840. 870.
                          870,
        830 .
                                                                         FLUX 250
                                                         920.
     . 1050, 1080, 1110, 1050, 1010, 1010.
                                             940.
                                                  960.
                                                               87¢.
                                            790.
                                                                         FLUX 260
       820.
              730. 820.
                         813.
                               310.
                                      310.
                                                  810.
                                                         32 O •
                                                               889.
                                                         980.
              990. 1010. 1040. 1030. 1020. 1030.
                                                                         FLUX 261
        900.
                                                   980.
                                                               940 .
                                                                         FLUX 262
     930/
                                                                         FLUX 063
C----- SOLAR FLUX FOR 620101 TO 620430
                                                                         FLUX 264
      DATA SFL13/
                                                         740.
                                                                         FLUX 265
                                             770.
                    79C.
                                780.
                                      770.
                                                  740.
                                                               750,
        890.
             340.
                          810.
              770. 740.
                               860.
                                      R4C.
                                             870.
                                                  940.
                                                         990. 1070.
                                                                         FLUX 266
                         8 20 +
                                                                         FLUX 257
     * 1120 . 1110 . 1160 . 1140 . 1150 . 1150 . 1150 . 1150 . 100 . 1010 .
                                                                         FLUX PAR
     . 1020.
                                                   820.
                                                        830.
                                                                         FLUX -269
     · 1100. 1030. 1010. 1040.
                                920.
                                       86¢.
                                             920.
                                                               810,
                                                   910. 1080. 1070.
                                                                         FLUX 370
                   840.
                         8 30 +
                                830,
                                       960.
                                            870.
        620. 810.
     · 1140 · 1210 · 1360 · 1347 · 1290 · 1290 · 1360 · 1220 ·
                                                                         FLUX 271
                                                         790.
                                                               750.
     · 1210. 1120. 1000.
                          8.50.
                                360.
                                       S10.
                                            40.0%
                                                  770.
                                                                         FLUX 272
                          821.
                                947.
                                       860.
                                            920.
                                                  980. 1160. 1180.
                                                                         FLUX 273
        783. 920. 810.
     · 1273, 1280, 1390, 126), 1280, 1180, 1170, 1090, 1030,
                                                               990.
                                                                         FLUX 274
        0.20 .
                                                                         FLUX 575
        FEO. 830. 600. 783. 763.
                                      7.80.
                                           770. 770. 780.
                                                               810.
                                                                         FLUX 174
        880, 930, 1020, 1100, 1110, 1190, 1140, 1100, 1090, 1090,
                                                                         FLUX 277
     · 1120, 1120, 1000, 1000, 1010, 1000, 1000, 960, 930, 910/
                                                                         FLUX 278
FLUX 270
```

```
FLUX 280
 DATA SFL14/
                                                                                   FLUX 281
                                         870.
                                                               870.
                                                                      910,
                   94C.
                          910.
                                 870.
                                                830.
                                                        840.
    940.
           950.
                                                                                   FLUX 2º2
                          940.
                                                        950.
                                .910.
                                         890.
                                                930.
                                                               970. 1030.
    980 .
           980.
                   960,
                                                                                   FLUX 283
                                       1100.
                                              1090. 1030. 1040. 1050.
   1060, 1100, 1110, 1110, 1120,
                                                                                   FLUX 284
  1040.
                                                                                   FLUX 235
                                         870.
                                                                      900,
                   870,
                          8 50 .
                                                920.
                                                        900.
                                                               910.
    980,
           920.
                                  850.
                                                                                   FLUX 286
                                                980.
                                         950.
                                                        97C.
                                                               980.
                                                                      950.
    R90 .
           SAD.
                   890.
                          890.
                                 930,
                                         920.
                                                                                   FLUX 187
                                  900.
                                                930.
                                                        910.
                                                               910.
                                                                      910.
    900.
           900.
                   860.
                          873.
                                                                                   FLUX 288
                                  380.
                                         860.
                                                        830.
                                                               800.
                                                                      810.
    900 •
           900.
                   900.
                          900 ...
                                                380.
                                                                                   FLUX 289
    830.
           820.
                   860.
                          862,
                                  850.
                                         640.
                                                840.
                                                        820.
                                                               900.
                                                                      800.
                                                                                   FLUX 290
    790.
           300.
                   780.
                          780.
                                  740.
                                         760.
                                                 740.
                                                        740.
                                                               730.
                                                                      720,
                                                                                   FLUX 291
    730 .
                                                710.
                                                        72¢.
                                                                      750.
                                                                                   FLUX 292
                                  700.
                                         720.
                                                               730.
           730.
                   720.
                          7 30 .
    710.
                                                                                   FLUX 293
                                                        850.
                                                                      840 .
    740.
           760,
                   790.
                          830.
                                  920.
                                         900,
                                                890.
                                                               83¢.
                                                              720
                                                                      720 +
                                                                                   FLUX 204
                   790.
                          790 .
                                  770+
                                         750 .
                                                730
                                                       720+
    820.
           800.
                                                                                   FLUX 295
    750/
                                                                                   FLUX 296
      -- SOLAR FLUX FOR 620901 TO 621231
                                                                                   FLUX 297
  DATA SFL15/
                                                                                   FLUX 298
                                                        970.
                                                               940.
                                                                      910 .
                   980.
                          9 90 •
                                  980.
                                        1000. 1000.
    840 4
           930.
                                                                                   FLUX 200
                                                               840+
                                                                       P4 C .
                                         910.
                                                390.
                                                       860.
    900.
           930.
                   920,
                          950 •
                                  930.
                                                                                   TLUX 3CC
                                         840.
                                                               960.
                                                                      900.
٠.
    P30 .
           810.
                   820.
                          8204
                                  940.
                                                340.
                                                        830.
                                                                       930.
                                                                                   FLUX 3C1
    860.
           960.
                   830.
                          820.
                                  860.
                                         84¢.
                                                350.
                                                        570 ·
                                                               e60.
    930.
                   950,
                          950.
                                  940.
                                         910.
                                                910.
                                                        890.
                                                               970.
                                                                       880.
                                                                                   FLUX 302
           930.
                                                                                   FLUX 303
    870.
           850.
                   840,
                          890 .
                                  970.
                                         870.
                                                 860.
                                                        820.
                                                               800,
                                                                       820 .
                                                                                   FLUX 304
    819.
                                                                       87¢.
           900.
                   800.
                          8 20 •
                                  820.
                                         830.
                                                 840.
                                                        850.
                                                               860.
                                                                                   FLUX 305
    .003
                                                               ROO.
                                                                                   FIUX 306
    87C.
           990.
                   930.
                          990.
                                  950.
                                         990.
                                                 944.
                                                        PRO.
                                                                       850 -
                                                                                   FLÜX 307
           790.
                   770,
                          200.
                                  770.
                                         770.
                                                 750.
                                                        710.
                                                               750.
                                                                      770:
    810.
                                                                                   FLÚX 308
    770 .
           810.
                   830.
                          822.
                                  920.
                                         830.
                                                 860.
                                                        840.
                                                               830.
                                                                       840.
                                                                                   FLUX 709
                   77C+
                          760.
                                  769.
                                         75C.
                                                 780.
                                                        830.
                                                               940.
                                                                       860.
    780,
           760.
    850 .
           820.
                   790.
                          7 90 •
                                  780.
                                         760 .
                                                 750.
                                                        740.
                                                               740.
                                                                       740.
                                                                                   FLUX 310
    750/
                                                                                   FLUX 311
      -- SOLAR FLUX FOR 630101 TO .630430
                                                                                   FLÚX 312
  DATA SFL15/
                                                                                   FLUX 313
    750.
            760.
                   770.
                          790.
                                  770.
                                         770.
                                                 770.
                                                        760.
                                                               780.
                                                                       eco.
                                                                                   FLUX 214
                                  850.
                                                 920.
                                                        900.
                                                                       780.
                                                                                   FLUX 315
    810.
            780.
                   790.
                          860.
                                         820.
                                                               780.
                           7 30 .
                                  740.
                                                 910.
                                                        800.
                                                                                   FLUX 316
    760.
            750.
                   740.
                                         730.
                                                               790.
                                                                       780.
                                                                                   FLÚX 317
    820.
                                                 43C.
                                                               790,
                                                                       790 .
    870.
            960.
                   85¢.
                          880.
                                  87C.
                                         850.
                                                        820.
                                                                                   FLÚX 314
    760.
            740.
                   74C.
                          750.
                                  760.
                                         770.
                                                 790.
                                                        Bio.
                                                                790.
                                                                       770.
                                                                                   FLÚX 310
    740.
            760.
                   750,
                          760.
                                  780.
                                         770.
                                                 750.
                                                        740.
                                                                                   FLÜX 320
            750.
                   780.
                           800.
                                  920.
                                         850.
                                                 940.
                                                        830.
                                                               920.
                                                                       800.
                                                                                   FLÜX 321
    740 .
                                                               770.
    780,
            770,
                   740.
                           800.
                                  800.
                                         790.
                                                 790.
                                                        80¢.
                                                                       770.
                                                                                   FLUX 322
                   750.
                           750 .
                                  75C.
                                         730,
                                                 740,
                                                        730.
                                                                750.
                                                                       740,
                                                                                   FLUX 323
    760.
            760.
                                                                                   FLUX 324
    730.
    730 .
            740.
                   740.
                           7 CO .
                                  720.
                                         780.
                                                 800.
                                                        810,
                                                               820.
                                                                       820.
                                                                                   FLUX 325
                           870.
                                  880.
                                         880.
                                                 870.
                                                        .085
     вво.
            930.
                   890.
                                                                840.
                                                                       790.
                                                                                   FLUX 726
            720.
                   710.
                           730.
                                  720.
                                         720.
                                                 750.
                                                        780.
                                                                780.
                                                                                   FLUX 227
     740 .
                                                                       830/
     --- SOLAR FLUX FOR 630501 TO
                                                                                   FLUX 328
                                        630831
  DATA SFL17/
                                                                                   FLÜX 329
                                  840.
     820 .
            620.
                   810.
                           820.
                                         870.
                                                 880.
                                                        860.
                                                                980.
                                                                       870 .
                                                                                   FLUX 330
                                  esc.
                                                        980.
     840.
            370.
                   890.
                           950 •
                                        1000.
                                                1000.
                                                                990.
                                                                       910.
                                                                                   FLUX 331
                                                                200•
     880.
            390.
                   930.
                           8 90 +
                                  B30.
                                          760.
                                                 900,
                                                        799.
                                                                       B30.
                                                                                   FLUX 732
     890.
                                                                                   FLUX 773
                           790 .
                                  780.
                                          770.
                                                                930.
                   810.
                                                 840.
                                                        900.
     P40.
            310.
                                                                       990 .
                                                                                   FILUX 374
                                  360+
                                         890.
   1030, 1090, 1070, 1000,
                                                 P60.
                                                        820.
                                                                790.
                                                                       750 .
                                                                                   FLUX RESS
```

```
FLUX 336
                                                                    750
                               740.
                                      740.
                                              720,
                                                     740.
                                                            730.
         720.
                720.
                        7 20 .
  730.
                                                                                FLUX 737
                                                                    750 •
                                                            770.
         770.
                780,
                        7 80 ,
                               760,
                                      77¢ 2
                                              770.
                                                     770.
  760.
                                                                                FLUX 338
                                                                    770.
         740.
                                      760.
                                              740.
                                                     740.
                                                            740.
  755.
                760.
                        770,
                               760:
                                                                                FLUX 339
                                      730.
                                              740.
                                                     730.
                                                            770.
                                                                    840 .
               .720.
                        7 20 ,
                               740.
  750 .
         730.
                                                                                FLUX 340
850
                                                                                FLUX 341
                                                                    770 .
                                                             800.
                                       esc.
                                              850+
                                                     510.
         370.
                870.
                        880.
                               860.
  870 .
                                                                                FLUX 342
                                       760.
                                              82 Q .
                                                     BC0.
                                                             790,
                                                                    B10 .
         730.
                740.
                        7 10 .
                               720.
  720.
                                                                                FLUX 343
                                                                    770 .
       . B60.
                900.
                        870.
                               850.
                                       820.
                                              800.
                                                     770.
                                                            770+
  840.
                                                                                FLUX 344
  770/
                                                                                FLUX 345
  --- SOLAR FLUX FOR 630901 TO 631231
                                                                                FLUX 346
DATA SELIS/
                                                                                FLUX 347
                                       740.
                                              78C.
                                                     750,
                                                             770.
                                                                    760 •
                        750.
                               740.
         730.
                740.
  730.
                                                                                FLUX 348
                               990.
                                     1050.
                                              990.
                                                     970. 1020. 1090.
         770.
                890.
                        980,
  720.
                                                                                FLUX 349
                                                             710.
                                                                    690 •
  900. 1050.
                990.
                        9 50 •
                               P6C.
                                       840.
                                              780.
                                                     740.
                                                                                FLUX 750
                                                                    870 .
                                                             850 .
  680.
         590.
                700.
                        710.
                               730.
                                       773,
                                              790.
                                                     850.
                                                                                FLUX 351
                                                             890.
                                                                    890 .
                               880.
                                       87C .
                                              840.
                                                     830,
  870 .
         840.
                 840.
                        862.
                                                                    A50 .
                                                                                FLUX 352
                                                             950.
                               960,
                                       960.
                                              990.
                                                     840.
  940.
         950.
                 940.
                        940,
                                                                    750 .
                                                                                FLUX 353
                               .009
                                       780.
                                              750.
                                                     750.
                                                             760.
         350.
                 930.
                        830.
  270.
                                                                                FLUX 754
                                       81C+
                                              80C.
                                                     B20.
                                                             860.
                                                                    840 .
  760.
         770.
                 770.
                        780 .
                               810.
                                                                                FLUX 355
                                                                    790.
         360.
                 840.
                        8 30 •
                               820.
                                       820.
                                              810.
                                                     790.
                                                             790.
  860 .
                                                                                FLUX 756
                                                                    790 .
                                                             780.
  790.
         BC0 .
                 790.
                        770.
                               760.
                                       76¢.
                                              770.
                                                     780.
                                                                                FLUX 357
                                                                    790 ,
                                                             780 .
                        750.
                               81 C.
                                       760.
                                              780.
                                                     790.
  800.
         820.
                 810.
                                                                                FLUX 758
                                                                    719 .
                                                     730.
                               750.
                                       740.
                                              740.
                                                             720+
  790.
         770.
                 760.
                        760.
                                                                                FLUX 259
  710/
                                                                                FLUX 360
 ---- SOLAR FLUX FOR 640101 TO 640430
                                                                                FLUX 361
DATA SFL19/
                                                                    709.
                                                                                FLUX D&C
                                              72.5
                                                             710.
                               713.
                                       725.
                                                      700.
  700.
          583,
                 7ú7,
                        704.
                                                                    735.
                                                                                FLUX 563
                                                      1150
                                                             724 0
                 736.
                        731.
                               1721
                                       120.
                                              692<sub>1</sub>
  721 .
          737.
                                                                                FLUX 364
                                                      749.
                                                             752.
                                                                    727.
                 724.
                        720.
                               709,
                                       715.
                                              711.
  725.
          723.
                                                                                FLUX 365
  721 .
                                                                    709.
                                                                                FLUX 366
                                       707.
                                              701.
                                                      712.
                                                             699.
                 688.
                        692.
                                704.
  709.
          595,
                                                                                FLUX 367
                                                      743, 1 739.
         709.
                        708 •
                                709.
                                       713.
                                              721 +
                                                                    745.
  698.
                 715.
                                                             793.
                                                      828.
                                                                                FLUX 368
                                       848.
  763,
          780.
                 825:
                        834.
                                827.
                                              833.
                                                                               FLUX 369
                                       724 .
                                              718.
                                                      727.
                                                             706.
                                                                    722+
          739.
                 725.
                        733.
                                709.
  761.
                                                      746.
                                                                                FLUX 370
                                778,
                                                             736,
                                                                    737.
                                              767.
  741.
          763.
                 773.
                        7.80 .
                                       762.
                                                             749.
                                                                    780.
                                                                                FLUX 371
                                       740,
                                              749,
                                                      755.
          779,
                 769.
                        765.
                                737.
  739.
                                                                                FLUX 372
   767.
                                              757,
                                                      737.
                                                             752.
                                                                    731.
                                                                                FLUX 773
                 768.
                        769,
                                761.
                                       758.
  773.
          753.
                                                             715.
                                                                                FLUX 774
                                719.
                                       712.
                                              724,
                                                      724.
                                                                    721.
  743.
          731.
                 734.
                        7 20 .
                                               705.
                                                      709.
                                                             698.
                                                                    700/
                                                                                FLUX 375
                                714.
                                       705.
          715.
                 711.
                        7 25.
                                                                                FLUX 376
                                      650831
  --- SOLAR FLUX FOR 640501 TO
                                                                                FLUX 377
DATA SFL20/
                                                             722.
                         715.
                                732.
                                       722.
                                               722.
                                                      729.
                                                                    715.
                                                                                FLUX 378
   700.
          595.
                 710.
                                                             703.
                                                                                FLUX 379
          709.
                 699.
                         654.
                                695
                                       716.
                                               712.
                                                      721,
                                                                     693 .
   715.
                                                                                FLUX 380
   697.
          588.
                 690.
                         698.
                                693.
                                       702.
                                              695.
                                                      715.
                                                             710.
                                                                    701.
                                                                                 FLUX
                                                                                       301
   696.
                                                      719.
                                                             711.
                                                                     725.
                                                                                FLUX PA2
                                69A.
                                       705.
                                               717.
                 702,
                         702.
   697.
          700.
                                               73E.
                                                      741 .
                                                             724,
                                                                                FLUX 383
                                739.
                                       729,
                                                                    727,
          710.
                 724.
                         729,
   725 4
                                                             494
                                       699.
                                               697.
                                                      696.
                                                                    695.
                                                                                 FLUX
                                                                                       704
                 696.
                         7.02.
                                693.
   720.
          718.
                                                                                FLUX 785
                                       701.
                                               693.
                                                      7C2+
                                                             694 .
                                                                     699.
   697.
          593.
                 696.
                         7 C4 .
                                570.
                                                                                FLUX 795
                                                      702+
                                                             595
                 687.
                         715.
                                71R.
                                       716.
                                               709+
                                                                    689 .
   679.
          591.
                                                                                       727
                                                      574.
                                                             579.
                                               673.
                                                                     683.
                                                                                 FLUX
   635.
          632.
                  685.
                         682+
                                579.
                                       669,
                                                                                 FLUX 389
   682.
                                        702,
                                               606.
                                                             598.
                                                                                 FLUX PRO
                         690,
                                710.
                                                      694.
                                                                     707.
          597.
                 701.
   682.
                                                                     714.
                                                                                 FLUX 300
                                777.
                                               733.
                                                      713.
                                                             722.
   699.
          705.
                 759.
                         787.
                                        748.
                                        689.
                                               696.
                                                      685.
                                                             685.
                                                                     699,
                                                                                 FLUX 391
                  703.
                         699+
                                671.
   709.
          706.
```

•

```
FLUX 392
         7027
                                                                                       FLUX 393
         --- 50LAR FLUX FOR 640901 TO 641231
                                                                                       FLUX 704
      DATA SFL21/
                                                                          728.
                                                                                       FLUX 305
         713.
                704.
                        708.
                               710 +
                                      709.
                                             715.
                                                     718,
                                                            719.
                                                                   724.
                                                            690.
                                                                                      FLUX 304
         730.
                732. . 729.
                               725.
                                      719.
                                              702+
                                                     690.
                                                                   694 ·
                                                                          695 .
         691 .
                591.
                        690+
                               684.
                                      681.
                                              697.
                                                     700.
                                                            .705.
                                                                   709.
                                                                           716.
                                                                                       FLUX 397
                                                                                       FLUX 708
         720.
                716.
                        718.
                               703.
                                      716.
                                              726.
                                                     740.
                                                            768.
                                                                   729.
                                                                          727.
                                                                                      FLUX 700
         715.
                697.
                       719.
                               703.
                                      702,
                                              705.
                                                     704.
                                                            718.
                                                                   722.
                                                                           719.
         703,
                718,
                               730.
                                      754,
                                              754.
                                                     749.
                                                                           732.
                                                                                       FLUX 400
                       723.
                                                            735,
                                                                   732.
         740.
                                                                                       FLUX 401
         736.
                733.
                       727
                               721 .
                                      716.
                                              726.
                                                     715.
                                                            711,
                                                                   704
                                                                          701.
                                                                                      FLUX 402
                                                                                      FLUX ACR
         702.
                707.
                       707.
                               711.
                                      706,
                                              703,
                                                     737,
                                                            733.
                                                                   731 .
                                                                          740 +
         720 .
                715.
                        699.
                               693.
                                      695.
                                              681 .
                                                     696.
                                                            688.
                                                                   710.
                                                                           715.
                                                                                      FLUX AC4
                                                                          760.
                                                                                      FEUX 405
         739.
                738,
                        744.
                               757.
                                      753.
                                              746.
                                                     738.
                                                            750.
                                                                   750.
         770 .
                                                            791.
                743.
                                                     778 .
                                                                                       FLUX 405
                        755.
                               761 .
                                      765.
                                              782.
                                                                   791.
                                                                          776 •
         762.
                749.
                               725.
                                      724.
                                                     738,
                                                                                      PLUX 417
                        735.
                                              715,
                                                            747,
                                                                   751+
                                                                           741 .
         759/
                                                                                       FLUX ARS
         --- SOLAR FLUX FOR 650101 TO 650430
                                                                                      FLUX 400
     - DATA SFLUX1/
                                                                                      FLUX 410
                               780.
                                              777,
                                                     757,
         827.
                915.
                        794,
                                      774,
                                                            749,
                                                                   741.
                                                                           735 •
                                                                                      FLUX 411
         727.
                725.
                        725.
                               720.
                                      724,
                                                                                       FLUX 412
                                              714.
                                                     712,
                                                            721 +
                                                                   715.
                                                                           737 •
         741.
                744.
                        734.
                                      731.
                               741.
                                              735 •
                                                     768.
                                                            751.
                                                                   766.
                                                                           786.
                                                                                       FLUX A13
         777.
                                                                                      FLUX 414.
      0
         762.
                768.
                        764,
                               752.
                                      741.
                                              741.
                                                     752.
                                                            734,
                                                                   734.
                                                                           739.
                                                                                       FLUX 415
         718,
                712.
                        706,
                               701.
                                      708.
                                              714.
                                                     716.
                                                            7¢5.
                                                                   706.
                                                                           698.
                                                                                       FEUX 416
                               729.
         700.
                703.
                        715.
                                      727.
                                              723.
                                                     746.
                                                            749.
                                                                                      FLUX 417
                740.
                             · 7·38 •
                                     748.
                                                     758.
                                                                  77.5.
        ~7.51 .
                       737.
                                            755.
                                                            734+
                                                                          721 .
                                                                                       PLUX 613
                726,
         709,
                                      719.
                        74¢+
                               731.
                                              1054
                                                     1015.
                                                            743.
                                                                    163.
                                                                           135.
                                                                                       FEUX 419
         734,
                721.
                        725.
                               7 23 .
                                     734.
                                              730.
                                                     718.
                                                            714.
                                                                   717.
                                                                           712.
                                                                                       FLUX 420
         714.
                                                                                       FLUX A21
         711.
                715.
                        713.
                               711.
                                      708.
                                              710.
                                                     705.
                                                            707.
                                                                   719.
                                                                           734 .
                                                                                       FLUX 423
                737.
                        740.
                               753.
                                      755.
                                              751 .
                                                     739.
                                                            737,
                                                                   748.
                                                                           731.
                                                                                       FLUX 423
                735.
                        740.
                               716.
                                      704.
                                              700.
                                                     702.
                                                            705.
                                                                   712.
                                                                           709/
                                                                                       FLUX 424
         --- SOLAR FLUX FOR 650501 TO 650831
                                                                                       FLUX 425
      DATA SFLUX2/
                                                                                      FLUX 426
                        719.
                               709.
                                      702+
                                              717.
                                                     727.
         722 •
                719.
                                                            734.
                                                                   738.
                                                                           735 .
                                                                                       FLUX 427
         725.
                 733.
                        760.
                               770.
                                      523.
                                              883.
                                                     232.
                                                            926.
                                                                   945.
                                                                           970.
                                                                                       FLUX 428
         951.
                945.
                        884,
                               873,
                                      831.
                                              BOC.
                                                     761.
                                                            765.
                                                                   758.
                                                                                       FLUX 429
                                                                           761 .
         736.
                                                                                       FLUX 430
                                                                           .
                758.
                        774.
                               805.
                                              807.
                                                     795.
                                                            897.
         728 .
                                      306.
                                                                   814.
                                                                           807.
                                                                                       FLUX A31
         789.
                784.
                        792.
                               785.
                                      791.
                                              784 .
                                                     787.
                                                            808,
                                                                   774.
                                                                           785 .
                                                                                       FLUX 472
         784 .
                807.
                        828.
                               807.
                                      319.
                                              814.
                                                     8¢3.
                                                            793
                                                                   790.
                                                                           796 .
                                                                                       FLUX 433
         786.
                782.
                        788,
                               785.
                                      780.
                                              812.
                                                     343.
                                                            833,
                                                                   841.
                                                                                       FLUX 424
                                                                           830.
         826.
                BCB.
                        788,
                               772.
                                      770,
                                              745.
                                                     743.
                                                            743,
                                                                    749,
                                                                           754.
                                                                                       FLUX 425
         750.
                739.
                        732.
                               724,
                                      723.
                                              717.
                                                     723.
                                                            729.
                                                                   734,
                                                                           734 -
                                                                                       FLUX 436
         730 .
                                                                                       FLUX 437
         742.
                 752.
                        796.
                               807.
                                      785.
                                                     218.
                                              811.
                                                            795.
                                                                   798.
                                                                           782 .
                                                                                       FLUX 633
         789 .
                 779.
                        767.
                               755.
                                      744.
                                              756.
                                                     742.
                                                            750.
                                                                   761 .
                                                                           755.
                                                                                       FLUX 639
                        746.
         753.
                 746.
                               747,
                                       733,
                                              735.
                                                     760.
                                                            747.
                                                                    757.
                                                                           754 ,
                                                                                       FLUX 640
                                                                                       FLUX 441
         ---- SOLAR FLUX FOR 650901 TO 651231
C-
                                                                                       FLUX 442
       DATA SFLUX3/
                                                                                       FLUX 447
                 773.
         769.
                        779.
                               780.
                                      40C+
                                              783.
                                                     789.
                                                            700.
                                                                    772.
                                                                           757.
                                                                                       FLUX C46
         757.
                 763.
                        759,
                                       757,
                               761.
                                              745,
                                                     745.
                                                            777.
                                                                    734,
                                                                           734.
                                                                                       FLUX 445
         731.
                 717.
                        723.
                               765.
                                       762.
                                              774.
                                                     707.
                                                            BOR.
                                                                           A93.
                                                                    376.
                                                                                       FLUX 646
          C 22.
                 933.
                        961,
                               975.
                                       916.
                                              251.
                                                     335.
                                                            826.
                                                                    330.
                                                                           331 .
                                                                                       FLUX 447
```

```
FLUX 44R
        757.
                                                    716.
                                                          712.
                                                                 720.
                                       718.
                                             720.
                    754.
                           743.
                                 733.
              745.
                                                                           FLUX 440
                                                    762.
                                                          756.
                                                                 751.
              754,
                           755.
                                 770.
                                       773. . 770.
                    779.
        726,
                                                                           FLUX 450
        769.
                                                                           FLUX 451
                                              837.
                                                    789.
                                                          904 .
                                                                 824 .
        776,
                    798.
                           784 .
                                 767.
                                       792.
              782.
                                                                 709+
                                                                           FLUX 452
                                              726.
                                                    733.
                                                          716.
                           744.
                                 748.
                                       724.
     . 825,
              701.
                    757,
                                                                           FLUX, 453
                                                    749.
                                                          719.
                                                                 730 •
                           693.
                                        699+
                                              721 .
        7.05 •
              700.
                    695.
                                 688.
                                                                           FLUX 454
                                              730.
                                                    744.
                                                          727.
                                                                 730 .
                                        740.
        733,
              729.
                    727.
                           723.
                                 732.
                                                                           FLUX 455
                                                                 721.
                                 744,
                                        751.
                                              759.
                                                    759.
                                                          743.
        732.
                    717.
                           724.
              735,
                                                                           FLUX 456
                                              809.
                                                    910.
                                                          319.
                                                                 792 •
              700.
                    703.
                           688,
                                 697.
                                        744.
        717.
                                                                           FLUX 457
        781/
                                                                           FLUX 458
C----- SOLAR FLUX FOR 660101 TO 660430
                                                                           FLUX 459
      DATA SFLUX4/
                                                                           FLUX 460
                                 774,
                                                         774.
                                                                 772 .
                           773.
                                        771.
                                              782.
                                                    779.
        793, 763,
                    759.
                                                                 990 .
                                                                           FLUX 461
                                              984. 1014. 1951.
                    843.
                           901.
                                 985. 1026.
        782 •
              812.
                                                                           FLUX 462
                                        827.
                                              799.
                                                    781.
                                                          783.
                                                                 763,
        957.
                                 954.
                    906.
                           889.
              918.
                                                                           FLUX 463
        754.
                           790.
                                                          829.
                                                                 838.
                                                                           FLUX 464
        776.
              769.
                    775.
                                 306.
                                        821.
                                              828.
                                                    823.
                                                          811 * 1,828 *
                                                                           FLUX 465
        836.
              332.
                    839.
                           839.
                                 833.
                                        827 .
                                              921.
                                                   322.
                                                                           FLUX 466
                                              832.
                                                    841.
        857.
              860.
                    827.
                           819.
                                 793.
                                        831 .
                                 748.
                                        755.
                                                          785.
                                                                 786.
                                                                           FLUX 467
                                              762.
                                                   754.
                           755.
        797.
              767.
                    758
                                                                           FLUX 468
              783.
                                 871.
                                        929, 1051, 1095, 1146, 1110,
                           814.
                     800.
        780.
                                                                           FLUX 469
     . 1203. 1051.
                           929.
                                 911.
                                        847.
                                              831.
                                                   876.
                                                          961.
                                                                 990 .
                    962
     . 1104.
                                                                           FLUX 470
   · . 1069, 1063, 1021, 1026, 1020, 1042, 1028, 1073, 1003,
                                                                 948.
                                                                           FLUX 471
       939, 948, 931, 910, 963, 932,
                                             952. 929. 890.
                                                                935.
                                                                           FLUX 473
     . 1917. 1934. 1938. 1037. 1038. 1013. 1960. 1949. 1945. 1933/
                                                                           FLUX 473
                                                                           FLUX 474
C+---- SOLAR FLUX FOR 660501 TO 660831
                                                                           FLUX ATS
      DATA SELUXS/
     . 917. 940. 94C.
                                                                           FLUX 476
                          925. 886.
                                      875.
                                              899, 878, 875, 866,
       883, 926, 929, 972, 992, 1001,
                                              989. 987. 1071. 1155.
                                                                           FLUX 477
     · 1236 · 1210 · 1139 · 1177 · 1151 · 1123 · 1085 · 1076 · 1068 · 1016 ·
                                                                           FEUX 478
                                                                           FLUX 479
     . 1056.
     · 1048. 1039. 1026. 1020. 1017. 1019.
                                                   995, 989, 958,
                                             959.
                                                                           FLUX ARO
        961. 959. 961. 969. 947. 979.
                                             995. 982. 969. 943.
                                                                           FLUX 481
        935. 961. 992. 1035. 1048. 1056. 1008. 1014. 995. 1007.
                                                                           FLUX 682
     · 1001 · 982 · 993 · 1048 · 1050 · 1097 · 1126 · 1144 · 1078 · 1081 ·
                                                                           FLUX 483
     · 1090, 1027, 1004, 998, 1011, 1028, 1012, 1013, 1015, 1018,
                                                                           FLUX 484
     · 1037 · 1055 · 1149 · 1206 · 1260 · 1276 · 1238 · 1242 · 1329 · 1280 ·
                                                                           FLUX 685
                                                                           FLUX 485
     . 1246.
     . 1259, 1196, 1182, 1160, 1105, 1060, 1915,
                                                    977. 964. 943.
                                                                           FLUX 487
       925, 928, 932, 928, 937, 951, 968, 975, 1000, 1016,
                                                                           FLUX ARR
     · 1027, 1055, 1147, 1227, 1263, 1302, 1334, 1326, 1298, 1261,
                                                                            FLUX 489
                                                                           FLUX 490
     . 1209/
C----- SOLAR FLUX FOR 660901 TD 661231
                                                                           FLUX AG1
                                                                           FLUX 492
      DATA SFLUX6/
     · 1166, 1363, 1032, 1019, 1005, 979, 959, 962, 953, 939,
                                                                            FLUX 493
        966, 1003, 1024, 1074, 1120, 1246, 1291, 1426, 1466, 1460,
                                                                           FLUX 494
     · 1372 · 1315 · 1275 · 1260 · 1188 · 1094 · 1029 · 979 · 996 · 957 ·
                                                                            FLUX 405
     · 1014 · 1020 · 1032 · 1006 · 1000 · 1019 · 1031 · 974 · 1035 · 1065 ·
                                                                            FLUX 606
     · 1096, 1149, 1228, 1203, 1206, 1203, 1205, 1135, 1156, 1241,
                                                                            FLUX AGT
     . 1209. 1198. 1111. 1061. 100A. 977. 923. 941. 997. 957.
                                                                            FLUX 402
                                                                            FLUX AGO
        971.
              967. 931. 917. 979. 1047. 1134. 1169. 1172. 1219.
                                                                            FLUX FCC
      . 1261. 1262. 1264. 1240. 1224. 1212. 1132. 1134. 1117. 1109.
                                                                            FLUX FOI
      · 1107 · 1165 · 1147 · 1128 · 1107 · 1078 · 1111 · 1041 · 290 · 946 ·
                                                                            FLUX FOR
        922. 951. 999. 1048. 1109. 1156. 1177. 1237. 1462. 1573.
                                                                            FLUX FOR
```

```
FLUX FO4
     · 1628 · 1576 · 1555 · 1495 · 1449 · 1351 · 1249 · 1112 · 1123 · 1076 ·
                                                                             FLUX 505
     · 1065. 1055. 1106. 1105. 1116. 1109. 1096. 1075. 1093. 1151.
                                                                             FLUX 506
     1205/
                                                                             FLUX 507
FLUX 508
      DATA SFLUX7/
                                                                             FLUX 509
     · 1244. 1430, 1540, 1607. 1682, 1605. 1536. 1429. 1447. 1456.
                                                                             FLUX F10
     · 1398, 1391, 1381, 1352, 1266, 1202, 1169, 1174, 1164, 1270,
                                                                             FLUX 511
     · 1382 · 1399 · 1488 · 1468 · 1427 · 1543 · 1583 · 1562 · 1582 · 1590 ·
                                                                             FLUX 512
     . 1564.
                                                                             FLUX 513
     · 1516. 1435. 1387. 1373. 1468. 1488. 1625. 1483. 1459. 1405.
                                                                             FLUX 514
     · 1337, 1329, 1300, 1252, 1264, 1249, 1222, 1242, 1210, 1285,
                                                                             FLUX F15
     · 1218. 1460. 1493. 1622. 1595. 1733. 1767. 1802.
                                                                             FLUX 516
       1942, 1978, 1964, 2059, 1792, 1774, 1638, 1561, 1579, 1484,
                                                                             FLUX 517
       1416. 1343. 1291. 1272. 1324. 1321. 1326. 1322. 1350. 1404.
                                                                             FLUX 518
     · 1472, 1495, 1557, 1619, 1692, 1639, 1628, 1807, 1784, 1758,
                                                                             FLUX 519
     . 1676.
                                                                             FLUX F20
     · 1586, 1410, 1333, 1250, 1221, 1190, 1262, 1357, 1333, 1303,
                                                                             FLUX 521
     · 1311 · 1258 · 1268 · 1335 · 1241 · 1261 · 1259 · 1287 · 1267 · 1271 ·
                                                                             FLUX F22
     · 1340, 1315, 1280, 1305, 1329, 1254, 1292, 1351, 1375, 1353/
                                                                             FLUX 523
C----- SOLAR FLUX FOR 670501 TO 670831
                                                                              FLUX 524
      DATA SFLUX3/
                                                                              FLUX 525
     · 1366. 1318. 1283. 1259. 1281. 1228. 1197. 1169. 1136. 1094.
     · 1061 · 1097 · 1073 · 1086 · 1110 · 1131 · 1154 · 1248 · 1356 · 1463 ·
                                                                              FLUX 526
                                                                              FLUX 527
      . 1603. 1827. 1940. 2009. 2107. 2189. 2138. 2026. 1983. 1774.
                                                                              FLUX 528
     . 1754 .
                                                                              FLUX 529
     · 1746. 1580. 1504. 1484. 1387. 1305. 1191. 1101. 1037. 971.
         969, 965, 998, 1038, 1072, 1118, 1120, 1154, 1190, 1213,
                                                                              FLUX FRO
                                                                             FLUX 531
      . 1220. 1206, 1331. 1324. 1331. 1278. 1315. 1367: 1334: 1261:
      · 1250 · 1257 · 1296 · 1272 · 1237 · 1166 · 1160 · 1118 · 1097 · 1058 ·
                                                                              FLUX 532
                                                                              FLUX 523
      · 1071 · 1361 · 1138 · 1224 · 1276 · 1301 · 1296 · 1313 · 1286 · 1355 ·
     · 1402. 1524. 1618. 1764. 1955. 1999. 2132. 2131. 2157. 2116.
                                                                              FLUX F34
                                                                              FLUX 535
      . 1889.
      · 1766, 1667, 1635, 1493, 1554, 1554, 1502, 1434, 1412, 1367,
                                                                              FLUX 536
      · 1362, 1339, 1375, 1303, 1274, 1329, 1483, 1571, 1723, 1729,
                                                                              FLUX 537
      · 1788 · 1785 · 1783 · 1659 · 1708 · 1720 · 1712 · 1699 · 1727 · 1640 ·
                                                                              FLUX F38
                                                                             FLUX 539
      . 1657/
                                                                              FLUX F40
 C----- SOLAR FLUX FOR 670901 TJ 671231
                                                                              FLUX FAI
       DATA SFLUX9/
      · 1605. 1556. 1470. 1409. 1387. 1338. 1284. 1339. 1315. 1336.
                                                                              FLUX 542
      · 1318. 1317. 1276. 1280. 1304. 1264. 1267. 1287. 1277. 1306.
                                                                              FLUX FA3
      · 1265, 1246, 1238, 1318, 1341, 1344, 1373, 1346, 1317, 1317,
                                                                              FLUX FAC
      • 1397, 1550, 1315, 1259, 1257, 1299, 1258, 1215, 1221, 1273, 1365, 1354, 1303, 1273, 1226, 1180, 1173, 1133, 1193, 1312,
                                                                              FLUX 545
                                                                              FLUX FAA
      · 1301 · 1373 · 1394 · 1413 · 1421 · 1482 · 1611 · 1770 · 1634 · 1595 ·
                                                                              FLUX FA7
                                                                              FLUX FAR
      . 1486.
                                                                              FLUX FAG
      · 1403, 1409, 1375, 1305, 1218, 1196, 1131, 1128, 1111, 1173,
     . 1241 · 1327 · 1347 · 1369 · 1429 · 1518 · 1549 · 1569 · 1667 · 1660 ·
                                                                              FLUX 550
      • 1614, 1594, 1566, 1525, 1547, 1579, 1550, 1572, 1503, 1444, • 1400, 1315, 1205, 1203, 1216, 1303, 1276, 1206, 1300, 1277,
                                                                              FLUX 551
                                                                              FLUX F52
                                                                              FLUX 557
      · 1365. 1391. 1430. 1534. 1643. 1813. 2020. 2124. 2054. 2015.
                                                                              FLUX 554
      · 1980 · 1823 · 1640 · 1529 · 1594 · 1653 · 1773 · 1841 · 1765 · 1589 ·
                                                                              FLUX 555
      . 1525/
                                                                              FLUX 556
 C----- SOLAR FLUX FOR 640101 TO 680430
                                                                              FLUX 557
       DATA SFLJ10/
      · 1714, 1718, 1793, 1833, 1912, 2097, 2239, 2302, 2220, 2083,
                                                                              FLUX 559
      · 2025. 1989. 1972. 1870. 1765. 1608. 1574. 1485. 1416. 1373.
                                                                              FLUX 559
```

```
. • 1325. 1357. 1379. 1486. 1601. 1740. 1850. 2130. 2207. 2291.
                                                                              FEUX 960
                                                                              FLUX 561
                                                                              FLUX F62

    2541 * 2530 * 2443 * 2203 * 1914 * 1722 * 1642 * 1515 * 1517 * 1557 *

                                                                              FLUX F63

    1557, 1591, 1491, 1457, 1418, 1425, 1386, 1352, 1375, 1386,

     • 1485, 1518, 1565, 1646, 1774, 1839, 1757, 1707, 1574,
                                                                              FLUX 564
     • 1678 · 1574 · 1508 · 1385 · 1378 · 1360 · 1314 · 1261 · 1223 · 1241 ·
                                                                              FLUX 565
                                                                              FLUX 566

    1283, 1304, 1278, 1279, 1259, 1282, 1352, 1322, 1301, 1296,

                                                                              FLUX, 567
     • 1400 • 1422 • 1455 • 1544 • 1560 • 1568 • 1592 • 1571 • 1562 • 1693 • .
                                                                              FLUX F68
     . 1558.
                                                                              FLUX F69
     . 1438, 1441, 1371, 1317, 1291, 1251, 1247, 1307, 1411, 1428,
     · 1384 · 1427 · 1419 · 1383 · 1400 · 1410 · 1322 · 1277 · 1253 · 1224 ·
                                                                              FLUX 570
     · 1234 · 1156 · 1117 · 1175 · 1199 · 1143 · 1191 · 1284 · 1280 · 1328/ .
                                                                              FLUX 571
C----- SOLAR FLUX FOR 630501 TO 680831
                                                                              FLUX 572
      DATA SFLU11/
                                                                              FLUX #73
     # 1448, 1432, 1563, 1545, 1560, 1485, 1454, 1416, 1395, 1397,
                                                                              FLUX 574
     · 1335, 1273, 1283, 1382, 1418, 1507, 1665, 1784, 1853, 1936,
                                                                              FLUX 575
     • 1946, 1903, 1857, 1826, 1810, 1771, 1709, 1531, 1509, 1513,
                                                                              FLUX 575
     . 1489.
                                                                              FLUX 577

    1520, 1454, 1438, 1443, 1383, 1455, 1522, 1546, 1490, 1479,

                                                                              FLUX 578
     · 1465 · 1434 · 1434 · 1395 · 1397 · 1382 · 1396 · 1432 · 1475 · 1515 ·
                                                                              FLUX 570
     • 1572. 1546. 1638. 1575. 1540. 1462. 1476. 1428. 1391. 1359.
                                                                              FLUX 580
     a 1283, 1203, 1172, 1160, 1194, 1201, 1350, 1471, 1536, 1570,
                                                                               FLUX FRI
     · 1628, 1561, 1556, 1559, 1479, 1495, 1436, 1352, 1353, 1339,
                                                                              FLUX 582
   .. • 1330 · 1390 · 1461 · 1527 · 1582 · 1544 · 1468 · 1436 · 1443 · 1385 ·
                                                                              FLUX FOR
     . 1347.
                                                                              FLUX FR4
     . 1342, 1342, 1409, 1355, 1359, 1460, 1398, 1418, 1467, 1466,
                                                                              FLUX F85
     • 1507: 1616: 1708: 1851: 1857: 1790: 1692: 1648: 1598: 1599:
                                                                              FLUX 586

    1586, 1538, 1377, 1308, 1242, 1180, 1145, 1194, 1217, 1255.

                                                                              FLUX FR7
     1235/
                                                                              FLUX FAR
C----- SOLAR FLUX FOR 630901 TO 681231
                                                                              FLUX FF9
      DATA SFLU12/
                                                                              FEUX FOA
     · 1295 · 1342 · 1428 · 1432 · 1396 · 1362 · 1411 · 1494 · 1494 · 1562 ·
                                                                              FLUX FO!
   .. • 1525, 1560, 1506, 1467, 1357, 1320, 1315, 1297, 1273, 1274,
                                                                              FLUX FG2

1336, 1275, 1268, 1430, 1581, 1600, 1578, 1588, 1540, 1443,
1365, 1363, 1452, 1461, 1479, 1453, 1469, 1446, 1373, 1346,

                                                                              FLUX FOR
                                                                              FLUX FC2
     · 1339, 1369, 1272, 1321, 1370, 1372, 1425, 1406, 1537, 1555,
                                                                              FLUX 505

    1633, 1648, 1676, 1733, 1717, 1725, 1728, 1710, 1911, 1639,

                                                                              FLUX 596
     . 1595.
                                                                              FLUX FG7
     · 1534, 1515, 1461, 1403, 1329, 1314, 1291, 1331, 1354, 1352,
                                                                              FLUX 509
     · 1326, 1293, 1315, 1313, 1335, 1276, 1405, 1489, 1413, 1391,
                                                                              FLUX 599
     • 1338, 1310, 1323, 1342, 1353, 1352, 1341, 1296, 1282, 1286,
                                                                              FLUX Foc
     · 1402. 1499. 1496. 1479. 1466. 1429. 1402. 1418. 1456. 1480.
                                                                              FLUX ACI
     · 1436 · 1390 · 1315 · 1343 · 1341 · 1270 · 1302 · 1339 · 1419 · 1447 ·
                                                                              FLUX FC2

    1471. 1473. 1463. 1540. 1553. 1540. 1535. 1507. 1472. 1442.

                                                                              FLUX FOR
     . 1396/
                                                                              FLUX FC4
  ----- SOLAR FLUX FOR 690101 TO 690430
                                                                              FLUX FOS
      DATA SFLU13/
                                                                              FLUX ACE

    1399, 1421, 1441, 1545, 1625, 1789, 1330, 1831, 1833, 1693,

                                                                              FLUX 607
     • 1685. 1631. 1572. 1533. 1541. 1922. 1491. 1443. 1316. 128C.
                                                                              FLUX (Cº
     · 1319 · 1339 · 1248 · 1308 · 1341 · 1422 · 1315 · 1296 · 1292 · 1261 ·
                                                                              FLUX FCO
     . 1264.
                                                                              FLUX A10
     • 1298• 1370• 1391• 1378• 1389• 1385• 1403• 1347• 1333• 1296•
                                                                              FLUX ALT
     · 1299 · 1246 · 1262 · 1250 · 1248 · 1200 · 1343 · 1304 · 1500 · 1591 ·
                                                                              FLUX F13

    1692, 1847, 2014, 2053, 2071, 1847, 1971, 1305.

                                                                              FLUX FIR
     · 1656 · 1520 · 1478 · 1479 · 1359 · 1364 · 1381 · 1373 · 1418 · 1378 ·
                                                                              FLUX Fia
     · 1360, 1385, 1340, 1350, 1619, 1740, 2001, 2139, 2085, 2137,
                                                                              FLUX 415
```

```
FLUX F16
     · 2308 · 2225 · 2050 · 1954 · 1811 · 1912 · 1777 · 1775 · 1819 · 1829 ·
                                                                            FLUX F17
     . 1855,

    1887. 1914. 1898, 1773, 1757. 1626. 1542. 1476. 1438. 1489.

                                                                            FLUX 618
                                                                            FLUX 619

    1509, 1555, 1725, 1794, 1812, 1671, 1547, 1468, 1464, 1493,

                                                                            FLUX F20
     · 1572 · 1478 · 1441 · 1447 · 1477 · 1437 · 1350 · 1349 · 1282 · 1291/
                                                                            FLUX F21
C----- SOLAR FLUX FOR 690501 TO 690831
                                                                            FLUX 522
      DATA SFLU14/
                                                                            FLUX £23
     • 1250 · 1278 · 1319 · 1355 · 1541 · 1382 · 1298 · 1385 · 1354 · 1377 ·
                                                                            FLUX 624
     • 1501 • 1603 • 1541 • 1577 • 1588 • 1594 • 1641 • 1624 • 1576 • 1590 •
                                                                            FLUX 625
     a 1707, 1774, 1728, 1714, 1685, 1637, 1535, 1432, 1226, 1167,
                                                                            FLUX 626
    .. 1119.
                                                                            FLUX 627
    . 11.33, 1212, 1334, 1590, 1778, 1964, 2222, 2394, 2358, 2435,
                                                                            FLUX F2B
     • 2466, 2367, 2287, 2235, 2005, 1747, 1572, 1539, 1470, 1449,
                                                                            FLUX F29
     • 1397 · 1331 · 1316 · 1289 · 1202 · 1172 · 1142 · 1183 · 1238 · 1368 ·
     · 1492, 1621, 1675, 1652, 1666, 1652, 1667, 1652, 1558, 1644,
                                                                            FLUX 630
     · 1581, 1514, 1451, 1343, 1265, 1261, 1242, 1199, 1181, 1154,
                                                                            FEUX 531

    1157, 1151, 1165, 1157, 1178, 1192, 1263, 1361, 1371, 1470,

                                                                            FLUX 632
                                                                            FLUX 633

    1757, 1925, 1888, 1929, 1877, 1719, 1631, 1503, 1455, 1393,

                                                                            FLUX 634
                                                                            FLUX 625

    1359, 1286, 1231, 1175, 1155, 1123, 1079, 1052, 1039, 1095,

    . • 1167, 1210, 1332, 1460, 1458, 1564, 1678, 1715, 1776, 1696,
                                                                            FLUX 636
     . 1638/
                                                                            FLUX 637
C----- SOLAR FLUX FOR 690901 TO 691231
                                                                            FLUX 638
      DATA SFLU15/
                                                                            FLUX 639 .
     · 1563 · 1552 · 1517 · 1505 · 1382 · 1357 · 1283 · 1241 · 1173 · 1166 ·
                                                                            FLUX 640
     · 1190 · 1297 · 1312 · 1299 · 1353 · 1342 · 1333 · 1344 · 1315 · 1365 ·
                                                                            FLUX 641
     . 1378, 1405, 1485, 1887, 1883, 1889, 1813, 1427, 1399, 1370,
                                                                            FLUX 642
    - 1223, 1432, 1325, 1322, 1409, 1432, 1650, 1501, 1417, 1357,
                                                                            FLUX 643
     • 1301, 1280, 1243, 1191, 1177, 1154, 1223, 1288, 1458, 1619,
                                                                            FLUX FAA
     ··1770: 1362: 1931: 2045: 2040: 2046: 2008: 1896: 1725: 1617:
                                                                            FLUX 645
                                                                            FLUX 646

    1394. 1389. 1267. 1296. 1300. 1319. 1358. 1304. 1277. 1228.

                                                                            FLUX 647
     · 1220 · 1223 · 1266 · 1341 · 1379 · 1455 · 1601 · 1772 · 1352 · 1389 ·
                                                                            FLUX 648
  • 1982, 2053, 2095, 2007, 1857, 1753, 1728, 1568, 1415, 1365.
                                                                            FLUX F49
     a.1302, 1315, 1317, 1389, 1333, 1234, 1207, 1121, 1161, 1148,
                                                                            FLUX 650
     · 1179: 1223: 1296: 1327: 1359: 1369: 1441: 1441: 1472: 1542:
                                                                           FLUX 651

    1603, 1530, 1563, 1529, 1536, 1510, 1469, 1490, 1534, 1579,

                                                                            FLUX AS2
     45187
                                                                            FLUX 653
C----- SOLAR FLUX FOR 700101 TO 700430
                                                                            FLUX 554
      DATA SFLU16/
                                                                            FLUX 655

    1509, 1445, 1371, 1315, 1265, 1176, 1130, 1133, 1196, 1345,

                                                                            FLUX 656

    1601, 1716, 1729, 1718, 1800, 1743, 1806, 1794, 1753, 1684,

                                                                            FLUX 657
     • 1770, 1605, 1534, 1436, 1495, 1564, 1630, 1620, 1637, 1548,
                                                                            FLUX F58
     . 1434.
                                                                            FLUX A59
      1346, 1331, 1237, 1194, 1210, 1319, 1394, 1526, 1541, 1703,
                                                                            FLUX 650
     · 1843, 2010, 1976, 1962, 2016, 1933, 1939, 1977, 1985, 1965,
                                                                            FLUX 661
      1911. 1830. 1839. 1859. 1796. 1783. 1769. 1741.
                                                                            FLUX 662
       1757, 1730, 1673, 1653, 1698, 1678, 1584, 1728, 1544, 1583,
                                                                            FLUX K63
       1563, 1644, 1524, 1473, 1449, 1390, 1337, 1335, 1302, 1411,
                                                                            FLUX FFA

    1497, 1509, 1649, 1693, 1672, 1664, 1592, 1538, 1531, 1494,

                                                                            FLUX 565
                                                                            FLUX KKK
     · 1608, 1571, 1635, 1704, 1794, 1929, 1934, 2041, 2185, 2247,
                                                                            FLUX 467
     · 2064. 1945. 1853. 1733. 1636. 1522. 1480. 1419. 1757. 1312.
                                                                            FLUX 669
     • 1263, 1286, 1301, 1301, 1348, 1353, 1390, 1486, 1561, 1533/
                                                                            FLUX FA9
C----- SOLAR FLUX FOR 700501 TO 700831
                                                                            FLUX A70
      DATA SELUITZ
                                                                            FLUX 471
```

```
· 1595, 1607, 1635, 1623, 1679, 1633, 1624, 1567, 1549, 1628,
                                                                            FLUX 672
     * 1762, 1803, 1931, 1969, 2063, 2060, 1970, 1946, 1974, 1839,
                                                                           FLUX 673

    1749, 1793, 1637, 1626, 1606, 1628, 1552, 1539, 1585, 1637,

                                                                            FLUX 674

 1652.

                                                                            FLUX 475

    1456, 1418, 1334, 1317, 1329, 1300, 1345, 1342, 1382, 1459,

                                                                            FLUX 676
     • 1695, 1717, 2002, 2074, 2092, 1986, 1996, 1818, 1751, 1633,
                                                                            FLUX 677
     • 1606, 1501, 1437, 1423, 1493, 1514, 1600, 1605, 1680, 1748,
                                                                            FLUX A78
     · 1799 · 1890 · 1946 · 1950 · 1910 · 1864 · 1663 · 1604 · 1484 · 1438 ·
                                                                            FLUX F79
     · 1377, 1354, 1307, 1263, 1219, 1214, 1259, 1310, 1358, 1364,
                                                                            FLUX 680
     - 1506, 1538, 1587, 1640, 1690, 1763, 1359, 1821, 1610, 1561,
                                                                            FLUX 681
                                                                            FLUX 682
                                                                           FLUX 683

    1340, 1285, 1279, 1274, 1284, 1280, 1282, 1318, 1383, 1373,

     · 1272, 1369, 1497, 1670, 1691, 1625, 1516, 1490, 1454, 1486,
                                                                            FLUX FR4
     • 1428 · 1417 · 1462 · 1402 · 1365 · 1357 · 1372 · 1416 · 1487 · 1490 ·
                                                                           FLUX 685
     · 1545/
                                                                           FLUX 686
C----- SOLAR FLUX FOR 700901 TO 701231
                                                                           FLUX 687
      DATA SFLU18/
                                                                           FLUX 588

    1541, 1567, 1632, 1634, 1623, 1615, 1644, 1569, 1572, 1439,

                                                                            FLUX EBS
   1344. 1261. 1201. 1219. 1180. 1184. 1169. 1207. 1347. 1469.
                                                                            FLUX 690
     • 1494, 1552, 1616, 1560, 1558, 1559, 1450, 1445, 1387, 1347,
                                                                            FLUX API
     * 1287, 1254, 1260, 1373, 1345, 1280, 1333, 1420, 1449, 1476,
                                                                           FLUX 692
     • 1428 · 1354 · 1318 · 1349 · 1402 · 1340 · 1315 · 1385 · 1390 · 1372 ·
                                                                           FLUX 693

    1365, 1350, 1490, 1612, 1686, 1871, 1918, 1903, 1890, 1752,

                                                                           FLUX 694
                                                                           FLUX FGS
     · 1633 · 1591 · 1532 · 1483 · 1475 · 1498 · 1506 · 1411 · 1419 · 1478 ·
                                                                            FLUX 595
     • 1555, 1551, 1791, 1864, 2000, 1935, 1841, 1931, 1855, 1737,
                                                                           FLUX 607
     · 1633 · 1542 · 1424 · 1339 · 1279 · 1293 · 1351 · 1489 · 1484 · 1525 ·
                                                                           FLUX CÓR
     · 1464, 1484, 1481, 1540, 1619, 1675, 1665, 1673, 1715, 1709,
                                                                           FLUX NOW
     · 1726, 1784, 1643, 1546, 1541, 1467, 1468, 1516, 1524, 1556,
                                                                           FEUX 700
     · 1463, 1368, 1321, 1244, 1240, 1223, 1198, 1173, 1234, 1290,
                                                                           FLUX 701

 1333/

                                                                           FLUX 702
C----- SOLAR FLUX FOR 710101 TO 710430
                                                                           FLUX 703
      DATA SFLU19/
                                                                           FLUX 704
     · 1305 · 1348 · 1347 · 1402 · 1461 · 1469 · 1502 · 1491 · 1528 · 1521 ·
                                                                           FLUX 705
     · 1490. 1505, 1481. 1539. 1537. 1564. 1553. 1693. 1658. 1692.
                                                                           FLUX 706
     · 1787, 1306, 1829, 1770, 1686, 1649, 1667, 1662, 1607, 1630,
                                                                           FLUX 707
     . 1701.
                                                                           FLUX 708
     · 1656 · 1605 · 1547 · 1486 · 1447 · 1437 · 1334 · 1232 · 1104 · 1095 ·
                                                                           FLUX 709
     · 1097, 1105, 1132, 1143, 1171, 1298, 1326, 1304, 1385, 1362,
                                                                           FLUX 710
     · 1361 · 1435 · 1432 · 1475 · 1464 · 1432 · 1400 · 1366 ·
                                                                           FLUX 711
     · 1292, 1258, 1217, 1160, 1137, 1091, 1052, 1040, 1045, 1070,
                                                                           FLUX 712
     • 1095. 1153. 1125. 1117. 1103. 1145. 1161. 1142. 1091. 1063.
                                                                           FLUX 713
     · 1126, 1124, 1682, 1078; 1082, 1078, 1085, 1662, 1034, 1009,
                                                                           FLUX 714
      1029,
                                                                           FLUX 715
     · 1005, 1076, 1090, 1077, 1083, 1073, 1132, 1101, 1089, 1098,
                                                                           FLUX 716

    1241, 1297, 1396, 1410, 1400, 1396, 1399, 1372, 1384, 1368,

                                                                           FLUX 717
     • 1289 · 1205 · 1175 · 1091 · 1060 · 1048 · 1017 · 975 · 958 ·
                                                                           FLUX 718
C----- SOLAR FLUX FOR 710501 TO 710831
                                                                           FLUX 719
      DATA SELUZO/
                                                                           FLUX 721
        953. 996. 1062. 1126. 1179. 1256. 1311. 1327. 1383. 1358.
                                                                           FLUX 721
      1353, 1302, 1250, 1223, 1180, 1161, 1128, 1112, 1098, 1060,
                                                                           FLUX 722
              034, 897, 887, 923,
     · 1020 ·
                                      937, 1039, 1070, 1085, 1103,
                                                                           FLUX 723
     . 1116.
                                                                           FLUX 724
     · 1101 · 1083 · 1074 · 1073 · 1062 · 1053 · 1015 · 101A · 1004 ·
                                                                 275.
                                                                           FLUX 725
                   937, 940, 913, 908, 931, 954, 946,
        960. 933.
                                                                 942.
                                                                           FLUX 726
                   949, 1053, 1101, 1159, 1225, 1311, 1411, 1488,
                                                                           FLUX 727
```

```
· 1451 · 1394 · 1305 · 1347 · 1346 · 1270 · 1225 · 1167 · 1077 · 1085 ·
                                                                         FLUX 728
     · 1087, 1096, 1112, 1139, 1256, 1253, 1215, 1210, 1269, 1188,
                                                                         FLUX 729
   · . 1136, 1157, 1213, 1345, 1214, 1223, 1190, 1167, 1143, 1163,
                                                                         FLUX 730
     . 1132.
                                                                         FLUX 731
     « 1097 · 1092 · 1064 · 1064 · 1069 · 1050 · 1025 · 1086 · 1121 · 1097 ·
                                                                         FLUX 732
     • 1047, 1021, 1019, 1007, 973, 989, 1036, 1105, 1262, 1411.
                                                                         FEUX 733
     « 1503, 1512, 1486, 1576, 1435, 1308, 1353, 1236, 1120, 1033,
                                                                         FLUX 734
     . 953/
                                                                         FLUX 735
C----- SO_AR FLUX FOR 710901 TO 711231
                                                                         FLUX 736
      DATA SFLU21/
                                                                         FLUX 737
        903. 901.
                   925, 926, 952, 1018, 1073, 1035, 983,
                                                                         FLUX 738
       .893. .916. $89..1081. 1135. 1125. .1165. 1166. 1131. 1103.
                                                                         FLUX 739
     · 1092. 1103. 1381. 1063. 1092. 1119. 1166. 1166. 1148. 1169.
                                                                         FLUX 740
     • 1146. 1142. I134. 1091. 1061. 1024.
                                                                         FLUX 741
                                             983, 981, 995,
                                                              954 .
        945. 949. 910. 859. 899. 897. 947. 991. 1098. 1156.
                                                                         FLUX 742
     · 1193, 1222, 1239, 1257, 1243, 1193, 1161, 1105, 1051, 1075,
                                                                         FLUX 743
     . 1062.
                                                                         FLUX 744
     · 1095, 1117, 1152, 1128, 1160, 1095, 1046, 1007, 1016, 1027,
                                                                         FLUX 745
     · 1046, 1026, 1033, 1031, 1011, 1047, 1054, 1041, 1076, 1130,
                                                                         FLUX 746
   . · 1149, 1188, 1204, 1216, 1217, 1283, 1281, 1256, 1172, 1141,
                                                                         FLUX 747
     · 1169, 1094, 1097, 1062, 1117, 1119, 1130, 1147, 1212, 1224,
                                                                         FLUX 748
     · 1222. 1240. 1187. 1185. 1173. 1176. 1312. 1346. 1344. 1352.
                                                                         FLUX 749
     · 1357, 1392, 1329, 1294, 1268, 1202, 1202, 1132, 1127, 1124,
                                                                         FLUX 750
                                                                         FLUX 751
C----- SOLAR FLUX FOR 720101 TO 720430
                                                                         FLUX 752
     DATA SFLU22/
                                                                         FLUX 753
     · 1047, 1031, 996, 979,
                               991, 1031, 995, 998, 343, 923,
                                                                         FLUY 754
     . ~958,~~996, ~990, 1059; fish, fi35, fi39, 1109, 1159, 1230.
                                                                         FLUY 755
     . 1279. 1232. 1363. 1372. 1318. 1238. 1189. 1195. 1161. 1129.
                                                                         FLUX 756
                                                                         FLUX 757
     · 1067, 1065, 1048, 1035, 1026.
                                     986, 1022, 1043, 1063, 1136,
                                                                         FLUX 758
     · 1184, 1239, 1263, 1367, 1458, 1532, 1682, 1844, 1906, 2025,
                                                                         FLUX 759
     · 1895 · 1804 · 1756 · 1642 · 1519 · 1493 · 1403 · 1332 · 1305 ·
                                                                         FLUX 760
     · 1255 · 1297 · 1311 · 1371 · 1408 · 1437 · 1433 · 1416 · 1374 · 1325 ·
                                                                         FLUX 761
     · 1349, 1285, 1293, 1297, 1353, 1330, 1339, 1319, 1310, 1352,
                                                                         FLUX 762
     · 1358, 1312, 1400, 1265, 1164, 1105, 1041, 1011, 965,
                                                                         FLUX 763
                                                                         FLUX 766
      960. 973. 981. 1010. 1053. 1181. 1213. 1238. 1305. 1303.
                                                                         FLUX 765
     · 1298. 1283. 1284. 1280. 1260. 1243. 1203. 1157. 1154. 1113.
                                                                         FLUX 766
     · 1069. 1094. 1084. 1102. 1116. 1099. 1090. 1032. 986. 970/
                                                                         FLUX 767
C------ SOLAR FLUX FOR 720501 TO 720831
                                                                         FLUX 7f9
      DATA SELU23/
                                                                         FLUX 769
                   977, 1027, 1087, 1176, 1209, 1288, 1330, 1393,
     • 950 • 949 •
                                                                         FLUX 775
     · 1408, 1436, 1616, 1628, 16.6, 1618, 1593, 1655, 1567, 1523,
                                                                         FLUX 771
     · 1482. 1433. 1352. 1355. 1273. 1163. 1143. 1108. 1162. 1168.
                                                                         FLUX 772
     . 1225.
                                                                         FLUX 773
    · 1282. 1300. 1375. 1495. 1648. 1591. 1527. 1502. 1491. 1395.
                                                                         FLUX 774
    · 1432, 1497, 1389, 1365, 1395, 1627, 1495, 1490, 1432, 1425,
                                                                         FLUX 775
     • 1390 • 1351 • 1307 • 1285 • 1255 • 1208 • 1319 • 1273 • 1324 • 1345 •
                                                                         FLUX 776
    · 1330. 1370. 1399. 1467. 1502. 1461. 1432. 1367. 1371. 1217.
                                                                         FLUX 777
    · 1236. 1193. 1199. 1195. 1176. 1151. 1146. 1089. 1099. 1100.
                                                                         FLUX 778
    · 1117, 1116, 1096, 1095, 1124, 1207, 1272, 1333, 1391, 1412,
                                                                         FLUX 770
    . 1503.
                                                                         FLUX 780
     31+3/
                                                                         FLUX 781
C----- SOLAR FLUX FOR 720901 TO 721231
                                                                         FLUX 782
     DATA SELUE47
                                                                         FLUX 783
```

	122*0/	**	FLUX 784
c-∽	SOLAR FLUX FOR 730101 TO 730430		FLUX 785
	DATA SFLJ25/	•	FLUX 786
•	. 120*0/		FLUX 787
C	SOLAR FLUX FOR 730501 TO 730831		FLUX 789
	DATA SFLU26/		FLUX- 789
	• 123*0/		FLUX 790
C	SOLAR FLUX FOR 730901 TO 731231	•	FLUX 791
	DATA SELJ27/	*	FLUX 792
	122#0/	*	FLUX 793
	CALL ADFLUX (NARCS, MFL UX, NFLUXS, SPLUX, REGYMD, ENDYMD)	•	FLUX 794
С	DATE OF LAST SOLAR FLUX VALUE 720731	,	FLUX 795
	RETURN		FLUX 796
	END		FLUX 797

FMODEL

DESCRIPTION

FMODEL is a BLOCK DATA routines which contains the geopotential model information.

The storage of the spherical harmonic coefficients, C_{nm} and S_{nm} , is of particular note. Because for physical reasons m \leq n, the set of C_{nm} and the set of S_{nm} each require only half a column more than half the matrix. To conserve storage, both sets of coefficients are stored in the same matrix. This storage algorithm is illustrated in Figure 1 for the case of 30 x 30 model used in GEODYN.

				•	•						. •								- :		:				
		1 2	3	4 5	5 6	7 8	9	10 11	₹2	13	14 19	16	17 . 1	8 19	20 2	1 22	23	24 2	5 2,6	27	28	29 30	31	32 3	5
	1	Not Used	511	sil si	537	Sil Sil	Si	5}} 5}}	Sil	S \$ \$ 8	5 1 3 S 1 8	517	518 5	8 538	Sig S	3 S 1	5 3 8	5,; 5,	\$ S, ?	S	s,; s	3 S 3 8	S, 8 5	5; 3 S S	7
	2	CI C	C]	511					•			•												S §	,
	3	c; c;	-	C] Si									•										; .	S §	
	4	ct ct	C	ct ct	S13																	•	, ,	, S ₂	
	5	C §			Ci	511																•		Si	
	۵	C §			_	c: si	L		٠											,		'		Sž	
	7	C }		•		C3	511															•		Si	
	8	C#					C.	S11			•					•								S	
	9	C;						C1 S11	_				*		٠									Si	
	10	Ci.						C ! 8	Sil							,	Et	c.						S	
	11	Cfi		•					CH	S}}														S	۰
	12	Ci.		•		•				CIE	313				•									51	
	13	C?,		೦೫					•	(:}}}s}}	<u> </u>					•							si	
	14	Cf.		REPRODUCIBILITY ORIGINAL PAGE I							टोः	s ;					•		_				•	នទ	
	15	CPs		92 K	İ	•						CIE	SIE											2 5	١.
0	16	Ci		- K 3					•			-,,,	cii sii					*						s٩	
_	17	ci.		Εď										si:		٠								s١	
_	13	C?.		면	2	Et	c.							cls	S []			·						5 (
7)	19	c f ,		DIBILITI PAGE											Ci; S	<u>}</u>								5 ?	
j	20	Cå,		HH							•				_C ₂	6 511				•		,		5 !	1
	21	C2,		Σ												C 1 1	518							5 ?	
	22	C1,		F 2	:									v			ا إن	} ;						5 }	
	23	C},		OF THE POOR							-	•	•				(23 E8						5,	•
	24	C].		出現	} {										. `			Cž	: S7					S s	
	25	Cls																	C 2 5	Si				5 8	
	26	C} e		•							•	. • •								Cit	5 }			ŞŞ	
	27	C\$ 7										•									C1 7	s: s:	Sŧ	St St	Ì
•	28	Cł,															•		•			c3	5 1	\$ 5	1
	29	C},				1		•								•							Sł	Si Si	_
	30	c3. c1	e C3∙	ci, ci.	cş.	cio ci.	Cl.	c]. c]:	cli	cli c	:}} c}}	cli	cii cii	CIS	cli cii	Cil	C33 (:37 C3	C38	C35	C}}	c38 c3	% C}3	Not Usad	
	•		*********																						

•	Index	Matrix Subscript Computation
C coefficients	n m	N M+1
S coefficients	n · m	31-N 33-M

```
PURPOSE

BLOCK DATA STORAGE OF THE COEFFICIENTS OF THE SPHERICAL HARMONIC EXFANSION OF THE GEOPOTENTIAL

COMMON BLOCKS

FMODEL

REFERENCES

'GEOCYN SYSTEMS DESCRIPTION'
VOLUME 1 — GEOCYN DOCUMENTATION
```

```
FMOD
                                                                                 14
 ELCCK DATA
                                                                                 15
                                                                           FMOD
 IMPLICIT REAL * E(A-H, O-Z)
CCMMON/FMUDEL/INDEX1.INDEX2.INDEX3.INDEX4.CS01(30).CS02(30).CS03(3FMOD
                                                                                 16
                                                                           FHOD
                                                                                 17
.0),CS04(30).
                                                                           FHOD
                                                                                  15
•CSO=(30),CSO6(20),CSO7(30),CSO8(30),CSO9(30),CS10(30),CS11(30).
                                                                                  1.9
                                                                           FM00
•CS12(30),CS13(30),CS14(30),CS15(30),CS15(30),CS17(30),CS18(30),
                                                                                  20
                                                                           EMOD
•CS19(30),C520(20),CS21(30),CS22(30),CS23(30),CS24(30),CS25(30),
                                                                           FM30
                                                                                  21
•C$26(30),C$27(30),C$28(30),C$29(30),C$30(30),C$31(30),C$32(30),
                                                                           FMOD
                                                                                  22
•C533(30) •MODEL(8)
                                                                           FMOD
                                                                                  23
 REALER MUDEL
                                                                           FMOD
                                                                                  24
 DATA MUDELZEHSAD 1969:8H STANDAR:8HC EARTH :8H
                                                                           FMOD
                                                                                  25
                              • ен
                                          , 8H
                  +₿H
                                                                           EMOD
                                                                                  26
 DATA INDEX1.1NCEX2.1NDEX3.1NDEX4/23.4.23.4/
                                                                                  27
                                                                          FMOO
CATA CSULZ
               ---10826300-02.0.253200C-05.0.159300D-05.0.230000D-06.FMOD
                                                                                  28
•-•5020000-06.C•3620000-06.0•118000C-06.0•100000D-06.0•354000D-06.FMUD
                                                                                  29
---202000D-06.0.4200000D-07.0.123000C-06.0.730000D-07.0.174000D-06.FMOD
                                                                                  30
•-•1070000-00.-•8499995D-07.0•231000C-06.0•215000D-06.0•5000000-08.FMGD
                                                                                  31
                                                                          .FMOD
                                                                                  32
                                             .0.0
                                                           .0.0
-- 14400UD-06, C.O
                              .0.0
                                                                          ZEMOD
                                                                                  33
                                             .0.0
                                                            .0.0
               , C'+O
                              . 0. 0
.0.0
                                                                                  34
                                                                           FMOD
 DATA C502/
                              . 0. 2127630-05,-.502693D-06,-.460853D-07.EMUD
                                                                                  35
.0.0
               .0.0
•-•7755013-07,C•17670109-05.0•214773C-07,0•8981990-07,0•6952150-07,FM09
                                                                                  36
•0•259153D-U3,-•2601690D-07,-•305263D-07,-•121347D-07,-•132829D-08,FMDD
                                                                                  37
                                                                          *FMOD
                                                                                  38
                                                            .0.0
                                             .0.0
.-. 1171030-07.C.O
                              .0.0
                                                                          FMGD
                                                                                  39
                                             .0.0
                                                            .0.0
.0.0
               . . . 0
                              .0.0
                                                                          /FMOD
                                                                                  40
                                                            .0.0
.0.0
                              .0.0
                                             .0.0
                                                                           EMOD
                                                                                  4 1
- DATA CS03/
               +C+15575200-05+0+3C4690C-06+0+7384390-07+0+991820D-07+FMOD
                                                                                  42
.0.0
• 0 • 6 6 2 0 4 1 D = 0 b • C • 28 1 9 3 4 0 D = 0 7 • 0 • 3 9 5 5 6 7 C = 0 8 • 0 • 4 6 2 2 9 8 D = 0 9 • = • 1 3 5 6 6 0 D = 0 8 • FM O D
                                                                                  43
•0.253180D-00,C.1253700D-08,-.192671C-08.0.117044D-08,-.147706D-08,FMCD
                                                                                  ሳ ሩ
                                                                                  45
                                                           ..0.0
                                                                          . EMOD
.0.639345D-09.C.O
                              . C. O
                                             .0.0
                                                            .0.0
                                                                           EMOD
                                                                                  16
                                             .0.0
.0.0
               . C.O
                              .0.0
                                                            .0.0
                                                                          ∠FM00
                                                                                  47
                                             .0.0
                              . 0. 0
.0.0
               . 6.0
                                                                           EMOD
 CATA CSO4/
                              .0.9569970-07.0.5912970-07.-.142322D-07.FMOD
•0•0
               . . . 0
•0•577$150-09.C•28573200-08.-•5807600-09.-•7290380-09.-•1351170-09.FMDD
                                                                                  50
•=•2717200-09,0•21748300-09,0•729369С-10,0•495814D-10,0•178795D-10,FMOD
                                                                                  51
                                                                                  52
                                                                           FMOD
                                             .0.0
                                                            .0.0.
.-. E7047 yD-10, C.O
                              .0.0
                                                                           .FMOD
                                                                                  53
                              .0.0
                                             .0.0
                                                            .0.0
.0.0
               . C.O
                                                                           ZEMCC
                                                                                  54.
                               . C. O
                                                            .0.0
.0.0
               . 0.0
                                                                           FMOO
                                                                                  55
 DATA CSUS/
```

```
.-.168330D-08,-.207839D-03,FMGC
                                                                                    SC
                               . 0.0
•-• 1527143-11.- •4185089D-09.-• 200713C-09.0• 488842D-10.-•283791D-10.€MOD
                                                                                    57
---12/1315-10,--13549109-10,--466964(-11,0.141454D-11,0.199491D-11,FMCD
                                                                                    58
                                                                            .FMOD
                                                             .0.0
                                                                                    50
                               . C . O
                                              .0.0
· · · 1321290-11.0.0
                                                                            *EMOD
                                                                                    60
                               4 C+ 0
                                              .0.0
                                                             .0.0
              .0.0
                                                                            ZEMOD
                                                                                    51
                                                             .0.0
.0.0
              . . . 0
                               . 0.0
                                                                            . EMOD
                                                                                    62
 CATA CSOo/
                                                                                    63
                                                             .0.310069D-09.FMOD
                                              .0.0
              . . . 0
.0.0
                               .0.0
•-•1706350-09,-•3079970D-12,-•102666D-10,-•628361D-12,-•496660D-11.FMDD
                                                                                    64
.0.1293970-11.0.62213200-12.0.178209D-11.-.341444D-T2.0.304688D-12.FMOD
                                                                                    65
                                                                            .FHOD
                                                                                    ó E
                               . C . O
                                                             .0.0
· + • 317402D-12 • 0 • 0
                                                                            .FMCD
                                                                                    57
             . . . . .
                               .0.0
                                              .0.0
                                                             .0.0
.0.0
                                                                                    50
                                                                            ZEMOD
                                                             . 0.0
.0.0
                                              .0.0
                                                                             EMCD
                                                                                    90
 CATA CSU7/
                                                                            .FMOD
                                                                                    70
                                                             .0.0
               .0.0
                               .0.0
                                              .0.0
0.00
.0.205637D-10,-.1754029D+10,-.1505440-11,0.319361D-12,-.225484D-12,FMOD
                                                                                    71
•0•14779c0-12,-•56597¢0D-13,-•124773C-12,0•137652D-13,0•464651D-13,FMGD
                                                                                    72
                                                                            . FMOD
                                                                                    73
0-02697570-13,C.O
                               . C. O
                                             .0.0
                                                            T . O . O
                                                                            .FMOD
                                                                                    74
               . . . 0
                              - 0 · 0
                                                             .0.0
.0.0
                                              .0.0
                                                                                    75
                                                                            ZEMOD.
               . C.O
                               . C. O
                                              .0.0
                                                             .0.0
.0.0
                                                                                    75
                                                                             ምለበግ
DATA CSOS/
                                                             .0.0
                                                                            • F400
                                                                                    77
               .0.0
                               .0.0
                                              .0.0
                                                                                    7 년
               .0.29524990-11.0.1753560-12.-.9615190-13.0.462616D-13.FMUD
.0.129873D-13.0.3221850D-14.-.660104E-14.0.836665D-15.0.559127D-14.FM0D
                                                                                    75
                                                                            • FMOD
                                                                                    3.0
                               .0.0
                                              .0.0
                                                             .0.0
                                                                            .FMOD
                                                                                    31
                                              .0.0
                                                             .0.0
.0.0
                               . C. O
                                                                            /FMOD
                                                                                    9.2
.0.0
                               . C. O
                                              .0.0
                                                             .0.0
                                                                             EMOD
                                                                                    33
 DATA CSOSZ
                               .0.0
                                              .0.0
                                                             .0.0
                                                                            . FMQD
                                                                                    34
.0.0
               .0.0
                               .-.9262070-13.0.763504D-13.0.547126D-14.FMOD
.0.0
               .0.0
                                                                                    35
.0.3C7451)-14,-.1284680D-15,-.470290C-15,-.184524D-15,-.339521D-15,FM3D
                                                                                    36
                                              .0.0
                                                                            - FMOD
                                                                                    87
·--1754920-15.C.O
                               .0.0
                                                             .0.0
                                                                                    38
                                              .0.0
                                                             .0.0
                                                                            . FMOD
               . C.O
                               + C + O
.0.0
                                                                            /FMOD
                                                                                    30
                               .0.0
                                                             .0.0
.0.0
               . C . O
                                              .0.0
                                                                             FMOD
                                                                                    90
 DATA CS10/
                                                                            • FM00
                                                                                    91
               . C . O
                               .0.0
                                              .0.0
                                                             .0.0
.0.0
                               .0.0
                                              .-.6355100-14.-.1273990-15.FMOC
                                                                                    92
               . C . O
.0.722552D-15,-.7810450D-16.-.275137C-16.0.257042D-16.0.591825D-17,FMOD
                                                                                    93
                                                             .0.0
.0.1317990-17.C.O
                               + C+ O
                                              .0.0
                                                                            FM30
                                                                                    94
                                              .0.0
               .0.0
                                                             .0.0
.0.0
                               . C. O
                                                                            EMGC
                                                                                    95
.0.0
                               .0.0
                                              . 0 . 0
                                                             .0.0
                                                                            /FMOD
                                                                                    91
 DATA CS11/
                                                                             FMUD
                                                                                    97
               + C + O
                                                                            . FMOD
                                                                                    Ġ S
.0.0
                               .0.0
                                              .0.0
                                                             .0.0
                               .0.0
                                              .0.0
                                                                                    GC
               + C + O
                                                             .0.5142540-15.FMOD
.0.0
•-•111359D-15,--5544930D-17,0,969366D-17,0.254507D-17,-.452211D-18,FMDD
                                                                                   100
--.324010D-18,0.0
                               .0.0
                                              .0.0
                                                             .0.0
                                                                            • FMOD
                                                                                   101
               . C . O
                               .0.0
                                              .0.0
                                                             .0.0
                                                                            .FMOC
.0.0
                                                                                   102
               .0.0
                               .0.0
                                                             .0.0
.0.0
                                              .0.0
                                                                            ZEMOC.
                                                                                   103
-CATA CS12/
                                                                             FM00 104
               .0.0
                               .0.0
                                                             .0.0
.0.0
                                              .0.0
                                                                             .FMDD 105
               . . . 0
                               . 0.0
                                              .0.0
                                                             .0.0
                                                                             ,FMOD 106
• 0 • 235 410D-16, - • 1975550D-17 • - • 445266C-18, 0 • 131834D-18 • - • 625906D-19, FMOC
.0.5c+2170-20,C.0
                               .0.0
                                              .0.0
                                                             .0.0
                                                                            • FMOD
.0.0
               . 0.0
                               .0.0
                                              .0.0
                                                             .0.0
                                                                             •FMUD 109
.0.0
               . C.O
                               . C. O
                                              .0.0
                                                             .0.0
                                                                            /FMOD 110
 DATA CS13/
                                                                             FMOD 111
```

```
. 0 . 0
                                               . 0 . 0
.0.0
               .0.0
.0.0
                                                              .0.0
                               + C + O
                                               .0.0
               .-.1742170D-18,-.2463320-20,0.6693749-20,0.194518D-20,F490
• 0 • 1645950-20 • C • 25612700-20 • C • 165292D-21 • 0 • 454057D-21 • 0 • 0
                                                                             · FMOD
                               . . . 0
                                                              .0.0
               .0.0
                                               .0.0
. O. O
                                                                             ZEMOD
                                                                                    117
                                                              .0.0
.0.0
                                                                                    110
                                                                              FMOD
 DATA CS14/
                                                                             .FMOD
                                                                                    119
                                               .0.0
                                                              .0.0
                               . . . .
               0.0
.0.0
                                                                              • ЕМОО
                                               .0.0
                                                                                    120
               . . . 0
                               . O. O
                                                              .0.0
0.0
                                .-.2571980-19.0.3762570-20.-.7531950-21.FHQD
               . C.O
.0.0
.0.237411D-21.0.8241809D-22.0.4874120-23.0.153383D-22.0.127350D-22.FMDD
                                                                                    122
                                                                                    123
                               .0.0
                                                                             . FMOD
.O. 400203J-24.C.O
                                               .0.0
                                                              .0.0
                                                                                    124
                               .. 0.. 0
                                                                             /FMOD
                                               .0.0
                                                              .0.0
                                                                              FMUD 125
 DATA CS15/
                                                                                    126
                                                                             . FMOD
                                . 0. 0
                                               .0.0
                                                              .0.0
.0.0
               .0.0
                                                                                    127
                                                                              #EMOD
               . C . O
                               .0.0
                                               .0.0
                                                              .0.0
.0.0
                                                                                    123
                                               .-.713342D-21,0.322877D-22,FMDD
                               .0.0
               . C.O
.-.5191290-23,-.3629150D-23,-.225483D-23,-.130602D-24,0.157393D-24,FMOD
.O.3372163-24.-.25157900-25, O.O
                                               .0.0
                                                              .0.0
                                                                              .FMOD 130
                                                                             /FMOD 131
                                               .0.0
                                                              .0.0
                                                                              FMOD 132
 DATA CS16/
                                                                              ,FMOD 133
                                              ....
                                                              .0.0
.0.0
               . C . O
                               .0.0
                                                              .0.0
                                                                              .FMOD
                                               .0.0
· D . O
               .0.0
                               .0.0
                                                              .0.7017510~24.FMOD 135
               .0.0
                                               .0.0
                                .0.0
                                                              .0.0
                                                                              * ENOD
                                               .0.0
-- 31/511D-23, C.O
                                .0.0
                                                                              .FMOD 137
                                                              .0.0
                                .0.0
                                               +0.0
.0.0
               . CeO
                                                                              ZEMOD 130
                                . 0. 0
                                               .0.0
                                                              .0.0
.0.0
               . C.O
                                                                               FMOD 139
 DATA (317/
                                                                              •FMQÐ 14€
                                                              .0.0
               . C . O
                                .0.0
                                               . . . 0
. 0 . C
                                                              .0.0
                                                                              GUMT.
                                                                                    141
                                               .0.0
                                . 0.0
               . 0.0
                                                              .U.135546U-24.FMUU 162
               . C . O
                                . 0.0
                                               # O # O
                                                                              .FMDD 143
                                . C. O
                                               .0.0
                                                              .0.0
· · · 4675540-24.0.0
                                                              .0.0
                                                                              •FMUD 144
.0.0
                                               .0.0
                                                                              ZEMOD 1A5
.0.0
                                               .0.0
                                                              ,0.0
                                                                              FMOD 146
CATA CS18/
                                                                              •FMOD 147
                                . C. O
                                               .0.0
                                                              .0.0
.0.0
               . . . 0
                                                              .0.0
                                                                              FMOD 148
                                .0.0
                                               .0.0
.0.0
                                                              .0.7536870-25.FMOD 149-
               . C . O
                                . 0. 0
                                               .0.0
.0.0
                                                                              •FMOD 150
                                                              .0.0
.-. 7156260-23, C.O
                                .0.0
                                                                              •FMOD 151
                                               .0.0
                                                              .0.0
.0.0
               . C . O
                                . C. O
                                                                              /FNOD 152
.0.0
                                .0.0
               . C . O
                                                                               FMOD 153
DATA C519/
                                                              .0.0
                                                                              .FMOD 154
               .0.0
                                .0.0
.0.0
               .0.0
                                .0.0
                                               .0.825801D-25.0.199486D-26.FMGD 155
-- 223649D-24,- .7919560D-24,- .397434D
                                             23.0.616671D-23.-.159612D-22.FMOD 156
·-.7093070-22.-.17709600-21.0.0
                                                              .0.0
                                                                              •FMGD 157
                                               .0.0
                                                              .0.0
                                                                              •FMOD 156
.0.0
               . . . 0
                                . C. O
               . . . 0
                                . 0. 0
                                               .0.0
                                                                              ZEMOD 159
-0-0
 DATA CS20/
                                                                              · FMOD 150
.0.0
               . C.O
                                . 0. 0
                                               .0.0
                                                              .0.0
                                                               .-.1765200-23,FMOD 162
.0.0
               .0.0
                                .0.0
                                               .0.0
.0.726910D-23.-.29164100-22.-.369401C-22.0.108015D-23.0.138418D-21.FMOD 153
.0.8117000-22.0.33173000-20.0.273134D-19.0.0
                                                               .0.0
                                                                              .FMOD 164
                                                               .0.0
               .0.0
                                .0.0
                                               .0.0
                                                                              • EMOD 165
.0.0
                .0.0
                                . C. O
                                                                              /FMOD 166
                                               .0.0
                                                               .0.0
.0.0
 DATA CS21/
                                                                               FMOD 167
```

```
.FMOD 168
                                             . 0 . 0
.0.0
                              .0.0
                                                           .0.0
                                                                          ▶FMOD 165
                                             .0.0
                              .0.0
0.0
               .0.0
               --.57126400-22.0.120077C-21.0.1031860-21.-.2456959-20.FMOD 170
.0.0
                                                                          .FMUD 171
•0.127028D-20.-.3073530D-19.0.153357D-18.-.516611D-18.0.0
                                                           . O . O
                                                                          •F400 172
               ...
                              . C. O
                                             .0.0
.0.0
                                                                          /FMOD 173
               . . . 0
                              . C. O
                                             .0.0
                                                           .0.0
.0.0
                                                                           FMCD 174
 DATA C522/
                                                                          •FMOD 175
                                             .0.0
                                                           .0.0
                              .0.0
.0.0
               .0.0
                                                           .0.0
                                                                          *FHOD 176
• U a O 🧟
               .0.0
                              .0.0
                                             .0.0
                                                           .-.6035170-19,FMOD 177
.0.0
               .0.0
                              +0.0
                                             .0.0
• 0•180659D-10,- •3866820D-18.0•772359C-16.- •212001D-17.- •323118D-17.FMOD 178
              .0.0
                                             .0.0
                                                           .0.0
                              .0.0
                                                                          /FMOD 190
                                                            .0.0
               .0.0
                              . • O • O
                                             .0.0
                                                                           FMOD 181
 CATA CS23/
                                                           .0.0
                                                                          • FMCD 182
               .0.0
                              . C. O
                                             .0.0
.0.0
                                                                          .FMUD 183
                                                            .0.0
               .0.0
                              .0.0
                                             .0.0
.0.0
                                                            .-.5695270-20.FMOD 184
                              .0.0
               .0.0
                                             .0.0
•0•117661D-19.-.2044699D-17.-.117861C-17.0.144311D-17.-.179336D-16.FMOD 185
                                                                          •FMOD 186
                              .0.0
·-·1675500-15.0.0
                                             .0.0
                                                            .0.0
                                                                          ZEMOD 107
                              . C. O
                                             .0.0
                                                            .0.0
.0.0
                                                                           EMOD 138
 CATA CS24/
                                                            .0.0
                                                                          •FMOD 139
                              • C • O
                                             .0.0
. 3.0
               .0.0
                                                                          • FMOD 190
. . . 0
               .0.0
                                             .0.0
                                                           .0.0
                              . C. O
                                                            .-.1556389-16.FMOD
               .0.0
                              .0.0.
                                             .0.0
.0.0
.0.714333D-17.0.4791489D-16.0.115615D-15.0.103853D-15.-.611562D-16.FMDD
                                                                          • EMOD 103
.0.1101300-15.0.71128680-14.C.O
                                             .0.0
                                                            .0.0
                                                            .0.0
                                                                          /FMOD 196
                                             .0.0
• O • O
               .0.0
                              .0.0
                                                                           FMOD 195
 CATA CS25/
                                           - ..O.O
                                                          - ... O is O
                                                                          *EMOD 195
            . . . 0..0
                          . . . . . O . O
- 0 - 0
                                                           .0.0
                              .0.0
                                             .0.0
                                                                          • FROD 197
• U • Ú
               . C.O
                                                            *-*5110600-17*FMC0
                              .0.0
               • C • O
                                             .0.0
 ---1241520-15,-.37082680-15,-.227841C-15,0.749597D-15,-.8094260-15.FMOD 199
                                                                          ₽EMOD 200
 --.912577D-14.0.1370900D-13.0.861829D-13.0.0
                                                            .0.0
                              .0.0
                                                                          /FMOD 201
.0.0
               .0.0
                                             .0.0
                                                            .0.0
                                                                           FMDD 202
 DATA CS25/
                                                            .0.0
               .0.0
                              • C • O
                                             .0.0
                                                                          ◆EMOD 203
.0.0
                                                                          •EMOD 204
               . . . 0
                                             .0.0
                                                            .0.0
0 • .0
                              . C. O
                                                            .0.2465660-15.FMOD 205
                              .0.0
                                             .0.0
               .0.0
 •0•201326D-14•0•6363628D-15:-•411635C-15:0•221610D-13:-•575625D-13:FMUD 206
 • 0 • 26 9 3750 - 1 3 • - • 24 2 04 700 - 12 • 0 • 454672C - 12 • - • 125606D - 11 • 0 • 0
                                                                          •FMJD 207
                                                            .0.0
               .0.0
                               .0.0
                                             .0.0
                                                                          /FMOD 208
 .0.0
                                                                           FMOD 209
 DATA CS27/
                                                            .0.0
                                                                          •FMOD 210
                                             .0.0
.0.0
               .0.0
                               .0.0
                                                                          •FMOD 211
               .0.0
                                                            .0.0
                               .0.0
                                             .0.0
 .0.0
                               .0.0
                                             .0.0
               .0.0
                                                            *--197608D-13.FMOD 212
 ---767024D-13,--,57571190-13,6.894201D-13,--.158330D-14.0.271842D-13,FMOD 213
 ---139681D-11.0.2908659D-11.0.724190C-11.0.708604D-11.--174166D-10.FMOD 214
                                                                          /FMOD 215
 DATA CS28/
                                                                           FMOD 215
               ....
                                                                          .FMOD. 217
 .0.0
                               .0.0
                                             .0.0
                                                            .0.0
               .0.0
                               .0.0
                                             .0.0
                                                            .0.231440D-12.FMOD 219
                               .0.0
                                             .0.0
 •0•175500D-13,--3070600D-12,--680746R-12,0•113499D-11,0•525778D-11,FMQD 220
  -,6864v30-11,0.3431620D-12,0.111560D-10,0.348475D-10,-.421805D-09,FMOD 221
 .-.147513D-06.0.0
                                              .0.0
                                                           .0.0
                                                                          /FMGD 222
  CATA CS29/
                                                                           FMOD 223
```

```
.FMOD 224
                                                             .0.0
.0.0
               . C . O
                               • 0 • 0
                                                                            •FMOD 225
                                                             .0.0
                               . C . O
.0.0
               . C . U
                                                             .0.4901610-11,FMGC 225
.0.0
               .0.0
                               . C. O
• 0 • 5 50 5770 - 11 • - • 680 40690 - 11 • 0 • 133359 C-10 • - • 6910345 - 11 • 0 • 2237075 - 10 • FM9D 227
•-•2347140-10,0.55557490-10,0.98234AC-10,-•2418700-09.-.152688D-08.FMOD 228
                                                                            ZEMOD 329
                                                             .0.0
.0.5463390-05.C.71685880-08.C.0
                                              .0.0
                                                                             EMOD 230
 DATA CS30/
                                                                            •EMOD 231
                                              .0.0
                                                             .0.0
.0.0
               . 0.0
                               .0.0
                                                                            .EMOD 232
                                                             .0.0
.0.0
               . C . O
                               .0.0
                                              .0.0
• 0 • 0
                                                             .0.5993980-10.FMGD 233
               .0.0
                               . C. O
                                              .0.0
•-•1232330-10,0.30408705-11.--#885354C-10.0.2040560-09.-.004650D-09.FMOD 234
  -,324246J-09,-,8930929D-09,0,172650E-09,-,330236D-00,0,325271D-09,FMGD 235
                                                                            ZEMOD 236
. 2.0
                                                                             FMOD 237
 DATA CSSL/
                                                                            .FMOD 236
                                                              .0.0
               . . . 0
                               .0.0
                                              .0.0
.0.0
                                                                            •EMOD 239
               . C . O
                               .0.0
                                              .0.0
                                                             .0.0
.0.0
                                                             .0.919401D-09.FMOD 240
                                              .0.0
                               .0.0
. O . O
               .0.0
---5239d0D-09+--1650310D-09+C+7C5093D-09,0+340654D-06+--476299D-08+FMQD 241
• + • 621344D + 08, + • 5561427D + 08, 0 • 691077€ + 08, 0 • 1558280 + 07, + • 437589D + 07, FMSD 242
                                                                            ZEMOD 1243
•--55762-J-07,0.1579400D-067--2167840-06.--8305220-06,0.0
                                                                             FMDD 244
 SATA CS32/
                                                                             •EMOD 245
               . . . 0
                               . C. O
                                              .0.0
                                                              .0.0
..0.0
               .0.0
                                              .0.0
                                                              ,0.0
                                                                            FMOD
                                                                                   306
.0.0
                               .0.0
               .0.0
                                                             .0.3754040-07.FMOD
.0.0
                               .0.0
                                              .0.0
.0.20+0230-07.0.2510030D-07.0.1631920-07.-.175503D-07.0.1755280-07.FMD0
                                                                                   3 4 5
▲★ •6282336~07,→•10461600~07.0•176579C~07.0•3466170~07.0•396244D~07.೯%3D
                                                                                   249
.-. 03.407D-07,-.45262500+06,0.2E03940-06,0.0
                                                              .0.0
                                                                            アドバコひ
                                                                                   250
 DATA CS33/
                                                                             FMOD 251
                                                                             • FMOD 252
.0.0
                . . . 0
                               · O · O
                                              .0.0
                                                              .0.0
                                                                             .FH00
                                                                                   253
                                              .0.0
                                                              .0.0
.0.0
               . . . .
                               * O * O
                                                                             • FMJD
                                                                                   250
                                              . . . .
                                                              . 0 . 0
 a () a ()
                . . . .
                               e Ú a U
                                                                             .FMQC
                                                                                   255
                .0.0
                                               .0.0
                                                              .0.0
.0.0
                                .0.0
                                               .0.0
                                                              .0.0
                                                                             · FMOD
                                                                                   256
                                .0.0
                .0.0
 • O • D
                                                                             /FMOD 257
                . . . 0
                                . 0. 0
                                               .0.0
                                                              .0.0
 .0.0
                                                                              FMOD 258
 END
```

NAME

GEODYN

PURPOSÉ

BLOCK DATA TO STORE DATE AND SOURCE TAPE NUMBER OF

THIS VERSION OF GEODYN

COMMON PLOCKS

GEODYN

BLOCK DATA GEDD 12 IMPLICIT REAL #8 (A-H+D-Z) GEOD 13 CCMWON/GEGDYN/DATE(5) 14 GEOD GEODYN', (720626) . SCURCE . TAPE GEDD 1.1326070 15 END GEOD 16

GEOIDH

DESCRIPTION

This subroutine performs two functions critical to the proper evaluation and estimation of surface density potentials.

- 1. GEOIDH alters the nominal Cartesian coordinates of surface density sub-blocks in such a manner so as to place these sub-blocks on the equipotential surface defined by the Earth's average global potential as computed by the function AVGPOT.
- 2. Also computed are the coefficients interrelating all surface density values such that adjusted surface density values are constrained not to conflict with the potential defined by evaluation of the spherical harmonic expansion below some specified maximum degree and order.

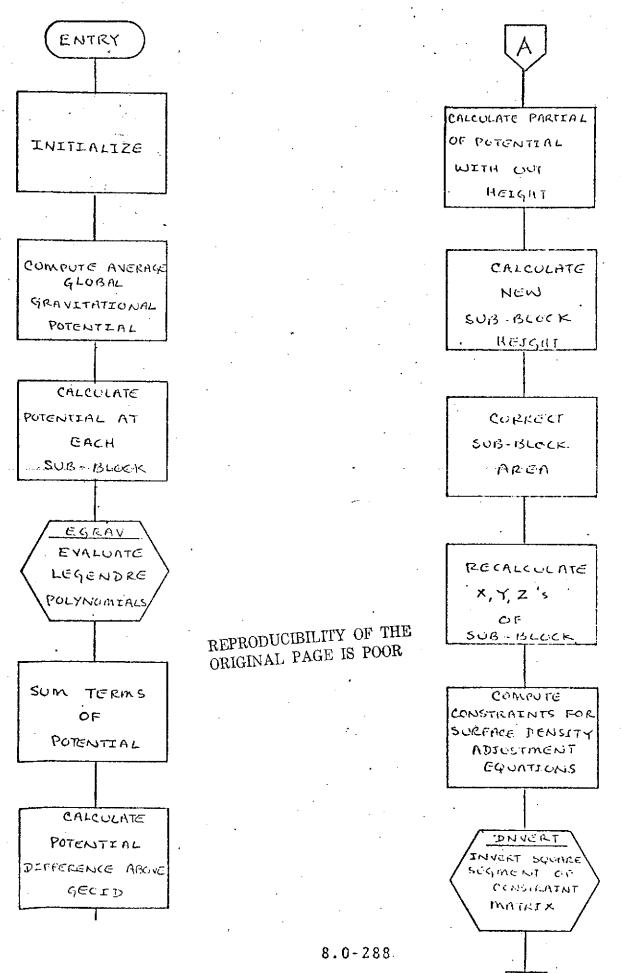
The GEODYN Systems Description, Volume I provides a thorough description of the physical and mathematic function performed by this subroutine.

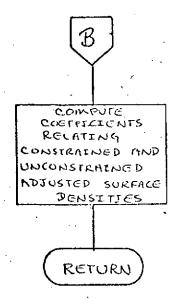
NAME	G EO10H			• .	
PURPOSE	SURFACE	· · · · · · · · · · · · · · · · ·		DCATIONS ON CONSTRAINT	
CALLING SEQUENCE	CALL GEO	OTOH(AREA.CE	ENT ER . DENCO	4)	
SYMBOL TYPE	DESCRIPT	ION			
AREA OP	INPUT &	OUTPUT - SI	JRF#CE DENS	ITY SUB-BLO	CK AREAS
CENTER OF	ז דטפאן		HE CEDCENTR JB-BLOCK CEI	IC COORDINA NTERS	TES OF THE
DENCON DP (NCCNST.1)	CUTPUT -	•		G CONSTRAINI JUSTED SURF	
SUBROUTINES USED	CLEAR	EGRAV	DNVERT	AVGPOT	
CCMMON BLOCKS	CSL IM	CPARAM VRBLOK	FMODEL	INITEK	INTBLK
INPUT FILES	NONE	,	•	•	
COUTRUT FILES	NONE				
REFERENCES		SYSTEMS DES	SCRIPTION: DOCUMENTATIO	on.	

	\cdot		
٠.	SUBROUTINE GEOIDH (AREA, CENTER, DENCON)	GEOI	36
	IMPLICIT REAL+S (A-H+O-Z)	GEOI	37
	LOGICAL CMPGPR	GEOI	38
	INTEGER ULIMIT	GEOI	3ċ
	COURCE PRECISION MODEL	GEOI.	40
	DIMENSION D(1) AREA(1) CENTER(3,1) FCT(3) DENCON(NCONST,1) INDS(4.) GEOI	6.1
	COMMONZESLIMZELIMIT(31).ULIMIT(31)	GEOI	42
	COMMUNICPARAMINSTA: NMAST: NSTEST: NDIM: MHIAS: NGPC1: NGPC2: NGPCOM:	1030	6.3
	 NCSEST : CMPGPR : LIM1 : LIM2 : NDEN : NDEN ST : NTIDST : NTIDEN : INNRSW : 	1020	44
	• . NCCNST • NOCCNS	GEO I	45
	COMMON/FMUDEL/INDEX1.INDEX2.INDEX3.INDEX4.CS(30.33).MODEL(8)	GEGI	46
	CCMMUN/INITEK/IGI(50).NOTIST.NSW1(6)	GEO1	17
	CGMMGNZINTELKZIHDOT1:THDOT2:THDT25:GM:AE:AE50:DUM(60)	GEOI	4 8
	COMMUNIXYZIXYZ(6).R.RSO.ISAT.IFORCE(2)	GEOI	69
	COMMON/VRBLUK/XYSO.CUSLAM(31).SINLAM(31).PR.PPSI.PLAMDA.	ICBD	50
	• P(33,30),ACRN(30),TPS1M(39)	CEOI	51
	EQUIVALENCE (D(1).SINPSI.P(1.1)).(CCSPSI.P(2.1))	GEO!	52
C	INITIALIZE	GEOI	53
	NOTIST=0	GEDI	54
	THEIG=0.000	GEOI	55
	REPRODUCIBILITY OF THE REPRODUCIBILITY OF THE		
	REPRODUCIBILITY OF TO A PAGE IS POOR ORIGINAL PAGE IS POOR		
	REPROJAT, PAGE 10		-
	ORIGINAL		

	INDEX2=1405x1-1	1020	56
	NCENTREGRADEN	GEOI	57
C	COMPUTE AVERAGE GLEBAL GRAVITATIONAL POTENTIAL	1030	58
	REPRUTEAVOPOT(45)	GE.O 1	59.
	CALL CLEAR(DENCON, EMNCONST, NDEN)	GEOI	60
C	CALCULATE PUTENTIAL AT EACH SUE-BLOCK	GEOI	61
	DC 1000 L=1.NCENTR	GEOL	62
	XYZ(1)=CENTER(1,L)	GEDI	63
•	XYZ(2)=CENTER(2,t)	6501	54
	XYZ(3)=CENTER(3.L)	GEOI	65
C	EVALUATE LEGENDRE FOLYNOMIALS	GE 0 1	65
	CALL EGRAV(THETG.RASAT.FCT)	G501	67
	THCT2K=R*(TF0T2S*CCSPSI)**2	GE.O I	63
	SUMO#0.000	GEOI	69
	SUM=0.000	GE O I	70
	FN=1.000	G E01	71
C	SUM TERMS OF POTENTIAL	GEOI	72
	DO 100 NC=2,1NCEX2	G 701	7.3
	NS=31-NC	GEOI	71.
	FN=FN+1.0D0	1020	75
	FREACHN(NC)	GEO1	76
	NUL =MAX0(UL IM IT(NC), 1)	GE O I	77
	DO 50 MC=1.NJL	GEOI	73
•	MS=34-MC	GEO1	79
	F1=FR*P(MC,NC)	GF D 1	6.0
	F=FN4F1	GEOI	81
	CCSS=CS(NC.MC) *COSLAM(MC)+CS(NS.MS) *SINLAM(MC)	GEOI	٤2
	SUNU=SUMO+F1*CCSS	GEOI	83
	50 SUR=SUM+F#CCSS	1030	24
	100 CONTINUE .	UŽU I	5 :
c	CALCULATE POTENTIAL DIFFERENCE ABOVE GEEID	QE U I	86
	UO=ÇMZR+SUMO	GEO 1	0.7
	POTCLF=0.500*R*THOT2R*UO=REFPOT	GEO1	38
C	CALCULATE PARTIAL OF POTENTIAL WITH RESPECT TO HEIGHT!	GEOI	63
	PARFOT=-THOT2F4(UO4SUM)/R	GEO I	90
c	CALCULATE NEW SUB-ELOCK HEIGHT	1020	0.1
	CR=PUTDIF /PARECT	GEOI	9.2
	RNE k= R+DR	GEOI	93
C	CORRECT SUB-BLOCK AREA .	GEDI	94
	AREA(L)=AREA(L)*(RNEW/R)**2	GEOI	25
	RCL=KKEW*COSHS1	GEOI	
c	RECALCULATE X.Y.Z'S OF SUB-BLOCK	GEO!	
	CENTER(1,L)=RCL*COSLAM(2)	GE01	
	CENTER(2,L)=RCL#SINLAM(2)	GEOI	
	CENTER(3,L)=RNEW*SINPSI	GEOI	
	IND=(L+3)/4	GEO I	
	NCCh=0	GEOI	
	A=AREA(L)	GEOI	
	RASENENZAE	GEOI	
	FN=1.000	1039	
C	COMPUTE CONSTRAINT EQUATIONS FOR SURFACE DENSITY ADJUSTMENT	GEOI	
	DU EUU N=1.NDCCNS	GEO!	
	FN=FN*RA	GEOI	
	FNA=KN#A	GFO!	
	N1=h+1	GEOI	
	DO 500 M1=1.N1	1039	
			• • 1

	•					
	NCCN#NCUN+1 /		•		GEOI	112
	ANEA=RNAVP(M1.N)				GEO1	113
	DENCON(NOON.IND)=DENCON(NOON	.IND) +R NPA +CO	SLAM(MI)		GEOI	114
	1F(#1.Lu.1) GC TO 500				GEO I	115
	NCCK=NCUN+1	•	•	÷,	GEOI	116
•	DENCON(NCON, INC) = DENCON(NCON	IND]+RNPA#3I	RLAM(M1)		GEOI	117
500	CONTINUE			*	GEOI	118
1000	CONTINUE	•			GEOI	119
	IF(NUENST.LE.C) RETURN				GEO I	120
•	NACJ=NOENST-NCCNST				1029	121
	NADJI= NADJ+1	*			1030	122
C INV	ERT SQUARE SEGMENT OF CONSTRA	INT MATRIX	•	•	GEOI	123
	CALL DRVERT (NCCNST, DENCON(1,	NACULL NCONST	,P)		GEOI	124
	L₩=2	•		•	G501	125
	IF (NDEH. GT. NDENST) EM=4				GEOI	120
	INDS(1)=1				GEOI	127
	INDS(2)=NADJ	•			GE 0 1	128
	INDS(3)=NOLNST41	•	•		GE 0 1	125
	INDS(4)=NUEN	and the second s	-	•	GEOI	130
C COM	PUTE CHEFFICIENTS RELATINGTOR	NSTRAINED AND	UNCONSTRAINE	DADJUSTED	GEOI	131
C SURI	FACE DENSIFIES -			•	GEO I	132
	DO 2500 L=1,LF,2				GEO1	133
	KI=INOS(L)			•	GEOI	134
	K2=1NDS(L+1)		•		GEOI	135
•	DB 2500 K=K1.K2.	•			GEOI	136
	00 2000 I=1.WC[NST		•		6501	
	A=0.000				GEDI	138
	DO 1500 J=1.NCCNST	•	•		GECI	139
	J1=J+NAUJ				G EO!	100
1500	A=A+LENCON(I.JI)+DENCON(J.K)				GEOI	14:
2000	C(I)=-A	•	•		GEDI	
	DO 2500 I=1.NCCNST				GEO I	163
2500	DENCON(1,K)=0(1)	200	•	,	GEOI	
	RETURN				1030	145
	END				GE O I	_





NAME	GEOSRO			·	•				
PURPOSE		TO READ OBSERVATION DATA IN GEOS FORMAT AND PARTIALLY PREPROCESS THE OBSERVATIONS							
CALLING SEQUENCE	CALL GEOS	CALL GEOSRD(NSTARD)							
SYMBOL TYPE	DESCRIPTI	DESCRIPTION							
NSTARD 1'.		NUMBER OF S CARDS	TAHI SNOITAT	WERE REAC) FROM				
SUBROUTINES USED	CLEAR2 NUMBR2 101F	RANDWA NUMBRA	DINRAD BIAS	EQUATR SATCL2	SATCLC YMDAY				
COMMON BLOCKS	APARAM CPARAM SIGELK	CGECS CSTINF TPEBLK	FRE BLK STANUM SREBLK	CTIME CONSTS	CEPHEM INTBLK				
INPUT FILES	IDTAPE -	INPUT FILE	NUMBERS						
OUTPUT FILES	FRINTER			•					
SCRATCH FILES	EATP - 10 ISCR - 11								
REFERENCES			DESCRIPTION*		ıx c				

SUBROUTINE GEOSRO(NSTARD)	GEDS	32
IMPLICIT REAL+2 (A-H,O-Z)	GECS	33
LUGICAL*1 GEUSZF.UKSAT.VFFCHN.PREPPC.LAST.SELSW	GECS	34
LOGICAL TIN, IY, NORATE, NEWTAP	GECS	35
LCCICAL SATSAT	GEES	3.6
INTEGER#2 IFREFR, INDPRE, IMTYPE, ISTNO, CULL, MINUS, DSTA, IS, CHANEL,	GECS	37
• 'NMEAS.MIYPE.PRETYP.ESTANC.ISTANO.ISTAND.STANDS.ITMOD.ITSEL.	GEOS	3 8
• INUD.SELSTA.MTP.ISTA.IT4.100.ISATNO.JBASE.KJASE	GECS	35
INTEGER A.DATE.RECNO.OUTP	GECS	40
REAL TOIF, SATCLC, SATCL2, GS2R, GINTEK, SIGSTO, SIG1, SIG2, DAYINT,	GEDS	41
• SIGCHG.RFINEX.SIGMAL.SIGMAZ.S4.SCPRRT.RFNDX	GEOS	٨2
DOUBLE PRECISION NAME, JNAME, ICARD	GECS	43
DIMENSION A(12,4), X(3), LAST(4), ISAT(4), MTP(4), IST4(4), IT4(4),	GECS	44
• 1STA4(4).1Y4(4).1H4(4).S4(A).1D4(A).RFNDX(2)	GEOS	45
COMPONZAPAKANZINPAR, INPARI, NETAS, NSTSTĄ, NSAT, NGPARC(5)	GECS	46
CCMMUNZCGECSZISAT2(2).IPREPR(4.50).RFINDX(2.50).INDPRE(2.50).	GEOS	47
NPRE, NSIG, NCULE .SIGCHG(50), IMTYPC(50), ISTNO(50), CULE(2,100)	GCCS	ع ٥
COMMON/PREBLK/CAY.CHS1.ORS2.SIG(2).SRFN)X.ISTA.MTYPE.NMEAS.	GEOS	٩ç
• ISATNO PRETYP . CHANEL . VHF CHN . PREPRO . RECNO	GEOS	50
COPPONICTIME/LATAEF, DAYREF, CAYE, DAYSTP, JAYINT(15)	GEOS	51
COMMUNICEPHEMIUNAME(331),ISTARC(381),ESTANU(381),ISTANG(386)	GEOS.	52
COMMON/CPARAM/NSTA.NMAST(18)	GEOS	53
COMMUNICSTINE/JOASE(283), KBASE(283), LBASE	GEOS	54
COMMONZSTANURZNAME (280) + STANCS (290) + NOSTOR	GECS	55

```
GEDS
      COMMONZOUNS IS ZUPI, DIWOPI, DZR, 52R
      COMMUNISTRE BEKILSTA (600) DOTINE (600) DEFRED (600) LYSI (100), THSI (100) GECS
                                                                                       5.7
                                                                                       5π
                                                                                GECS
          AX $2(100), IES2(100), ITMOO(366,11), ITSEL(100), IMOO(100),
                                                                                GEGS
                                                                                       50
          56L51A(1001.SELSw(100).1891AS(678)
                                                                                GEOS
                                                                                       ÷0
      COMPUNZINTULKZEINTEK (53) + NOPATE + INT CPK (73)
                                                                                GEOS
                                                                                       6.1
      CCMMON/SEGALK/SEGSTO(30).SGPRNT(30).IDTAPE(4)
                                                                                GEOS
                                                                                       62
      CCMMURZIPEBLEZINTP, CUTP(5), ICBS, ISCFA(4)
                                                                                GEOS
                                                                                       1.3
      EQUIVALENCE (SIGI.SIG(1)).(FKSAT.SIG2.SIG(2)).(MLAST.LAST(1))
                                                                                       64
                                                                                GEOS
      EQUIVALENCE (RENDX(I).SRENDX)
                                                                                       6.5
                                                                                GEO 5
      CATA LELLTE/SECTE/JERDALL/SENDALL/, NEWTP/3/
                                                                                       66
                                                                                GEDS.
      DATA . IGEOSA + 1 CEOS1 / 6 5 5 9 1 + 6 5 CE 9 1 /
                                                                                       6.7
                                                                                GECS
      CATA 166086.166082/68021.680021/
                                                                                       7.0
                                                                                GEO S
      CATA C/2.49742503/
                                                                                GEOS
                                                                                       10
      DATA MINUSZIH-Z.ISCR.DATPZ11.10Z
                                                                                GECS
                                                                                       7.0
C INITIALIZE
                                                                                       71
      NUMBER=0
                                                                                GEOS.
                                                                                GEOS.
                                                                                       72
      GECSZF=MTYPE.NE.1
                                                                                GEO S
                                                                                       73
      NCRATE= TRUE .
      NEWTAP=1085.20.2.08.1085.E0.3
                                                                                GEOS
                                                                                       74.
                                                                                GEOS
                                                                                       75
      1005=M00(1005.2)
                                                                                GEOS
                                                                                       76
      SIG(1)=0.000
                                                                                GEOS
                                                                                       77
      $16(2)=0.0DG
C DETERMINE NUMBER OF INPUT UNITS
                                                                                GEOS
                                                                                       7 14
                                                                                GEOS.
                                                                                       79
     .00 c10 I=1.3
      IF(IDTAPE(I).61.0) GO TO 610
                                                                                GEOS
                                                                                       30
                                                                                GEOS
                                                                                       8 1
      11=1+1
                                                                                GEOS
                                                                                       82
      DO 600 J=11.4
  600 ICTAPE(J-1)=ICTAPE(J)
                                                                                GEOS
                                                                                       63
      1CTAPE(4)=0
                                                                                GEOS
                                                                                       84
                                                                                GEOS
                                                                                       0.5
--640 CONTINUE
                                                                                GEOS
      NTAPORNUMORA(CLIDTARCIA):1
                                                                                       26
                                                                                GE.O.S
      IF (NTAPE+LT+0) NTAPE=4
                                                                                       £ 7
      [F(NTAPE.GI.O) GO TO 612
                                                                                GEOS
                                                                                       BP
                                                                                GEOS
                                                                                       AC
      NTAFE=1
      ICTAPE(1)=20
                                                                                GEOS
                                                                                       20
  612 IYYIN=0
                                                                                GEOS
                                                                                       0.1
                                                                                GEOS
      IHMIN=25000C
                                                                                       93
      IYMAX=939955
                                                                                GEOS
                                                                                       93
      IHMAX=0
                                                                                GEOS
                                                                                       91.
      CALL CLEARZ(ITMOD.386.11)
                                                                                GEOS
                                                                                       95
      MLAST=0
                                                                                GEOS
                                                                                       00
      DAYPRVEGATAEP
                                                                                GECS
                                                                                       97
      NURATE=.TRUE.
                                                                                GEOS
                                                                                       90
                                                                                GEOS
      ISEL = 0.
                                                                                       00
      DJE45E=YMDAY(5(010(+0+0+0D0)
                                                                                G505 100
      1F(1005.LE.V) (0 TO 620
                                                                                GEDS 101
C READ SELECT AND DELETE CARDS IF NECESSARY
                                                                                GEOS 102
      IYMAX=0
                                                                                GEOS 103
      IY#IN=9999999
                                                                                GEDS 104
  618 REAU(INTP.~OOC) ICARD.IYMD.IFM.IT.IST.ISTA.MTYPE.LMOD
                                                                                GEOS 105
                                                                                GEOS 106
      IF (ICARO. EQ. ENEALL) GO TO 520
      ISEL=ISEL+1
                                                                                GEOS 107
      SFL SW (ISEL) = ICARD . NE . DELETE
                                                                                6502 106
      IF(IT-LE-0) IT=999999
                                                                                GE95 109
      IYSI(15±L )= IYMD
                                                                               . GEOS 110
      1HS1(15EL)=1HM
                                                                                GEOS 111
                                        REPRODUCIBILITY OF THE
```

ORIGINAL PAGE IS POOR

```
GEOS 112
      IY $2( 15cL ) = [Y
                                                                            GFCS 113
      1HS2(15=L)=1ST
                                                                            GEOS 114
      ITSEL(ISEL)=MTYPE
      IMOD(ISEL)=MAXO(LMCD.1)
                                                                            GBOS 115
                                                                            GEOS 116
      SELSTA(ISLL)=1STA
                                                                            GEOS 117
      1F(.NGT.SELSW(ISEL)) GD TO 618
                                                                            GEOS 118
      IYMIN=MINO(IYMIN.IYMD)
                                                                            GEOS 115
      (MHI, MINHI) CHIMENINHI
                                                                            GEOS 120
      ITI:X44YI)OXAM=X4VYI
                                                                            GEOS 121
      IHMAX=MAXU(IHMAX, IST)
                                                                            GEOS 122
      GC TU 013
                                                                            GEOS 123
C READ FIRST RECURD FROM EACH UNIT
 620 00 628 Î=1.NTAPE
                                                                            GEOS 124
                                                                            GD05 125
      ICBS=IDTAPE(IJ
                                                                            GEOS 126
  622 READ(10B5,2000,EKR=622,FND=624) ISAT(1),MTP(1),ID4(1),IST4(1),
         IT4(1), 15TA4(1), IY4(1), IH4(1), 54(1), (A(J,1), J=1,12)
                                                                            GEOS 127
      IF(1SAT2(1).EC.0) ISAT2(1)=ISAT(1)
                                                                            GEOS 128
                                                                            GEOS 129
      00 670 J=1,NSAT
                                                                            GEOS 130
      IF(ISAT(1).Nc. 15AT2(J)) GO TO 670
                                                                            GEOS 131
      GJ TO 525
  670 CONTINUE
                                                                            GEOS 132
      GC TU 022
                                                                            GEDS 133
  624 LAST(I)= TRUI.
                                                                           - GEOS 134
  €25 CCNTINUE
                                                                            GECS 135
  630 1HN=1H4(1)
                                                                            GEOS 136
      IYNU= 1Y4(1)
                                                                            GEO5 137
      IF(LAST(11) 1YMD=9999999
                                                                         . GEOS 130
     .ITAPE=1
                                                                            GEOS 139
      IOUS=ICTAPE(1)
                                                                            GEOS 140
     "IF(NTAPELEG.I) GO TO 640
                                                                            GEOS 161
C TEST FOR LARLIEST TIME
                                                                            CEOS 102
      54ATM.S=1 883 00
                                                                            GEOS 143
      IF(LAST(I).CR.IYMD.LT.IY4(I)) GO TO 635
                                                                          . GEOS 144
                                                                            GEOS 145
      IF (IHM.LT.IHMS.AND.IYMD.EQ.IY4(I)) 60 TO 635
                                                                            GEOS 146
                                                                            GEOS 167
      IGES=IDTAPE(1)
                                                                            G505 148
      IHM=IHMS
                                                                           GEOS 109
      IYMU=IY4(I)
                                                                            GEDS 150
. 635 CONTINUE
                                                                            GEOS 151
      IF(LAST(ITAPE)) GO TO 700
                                                                            GEOS 132
      GU TO 640
                                                                            GEOS 153
  637 IF(LAST(ITAFE)) GO TO 630
                                                                           GEOS 154
C READ NEXT RECURD FROM UNITS LAST USED
                                                                            GEOS 155
  638 REAC(1055,2000,ERR=638,END=639) ISAT(ITAPE),MTP(ITAPE),ID4(ITAPE),GEOS 156
         IST4(ITAPE).IT4(ITAPE).ISTA4(ITAFE).IY4(ITAPE).IH4(ITAPE).
         $4(1TAPE),(A(J,ITAPE),J=1.12)
                                                                            GEOS 158
      IF(ISTA4(ITAPE).EQ.O) LAST(ITAPE) = TRUE.
                                                                            GEOS 159
      CKSAY= .FALSE ..
                                                                        - GEOS 160
C CHECK SATELLITE IC
                                                                            GEOS 151
      DO 665 1=1.NSAT
                                                                            GEOS 162
      IF (CKSAT) GO TO 665
                                                                            GEGS 163
      ISATNC=I
                                                                            GEOS 164
      OKSAT#ISAT(ITAFE).EO.ISAT2(I)
                                                                            GECS 165
                                      REPRODUCIBILITY OF THE
  665 CONTINUE
                                                                            GED$ 156
                                       ORIGINAL PAGE IS POOR
      IF ( . NUT . DKSAT) GU TO 637
                                                                            GEOS 167
```

```
GEOS 168
      GU 10 030
                                                                             GCDS 169
  639 LAST(ITAPE) = . TRUE .
                                                                             GEOS 170
      50 13 530
                                                                             659S 171
C REWIND IMPUT TAPES WHEN SCLECTION COMPLETE
                                                                             GEDS 172
  700 ISTA=0
                                                                             GEOS 173
      IF ( . NOT . REXTAP ) GO TO 20
                                                                             GEOS 176
      WRITE (NEW FP. 2000) ISAT(ITAPE) . MTYPE . ID . IST . IT. 1STA, IYMD . IHM .
                                                                             GEOS 175
         $4(ITAPE),(A(J, ITAPE),J=1,12)
                                                                             GEOS 176
      END FILE NEWTF'
                                                                             GEOS 177
      GU TU 20
                                                                             GEOS 117F
C CHECK FOR ACCEPTABLE TIME
  640 IF (IYND.LT. IYN IN.OR. (IYMD.EQ.IYMIN. AND. IHM.LT. IHMIN)) GO TO 537
                                                                             GEOS 179
     OOF OF GO ((XAMMI.SE. IMM.SE. IMMAX)) GO TO 700
                                                                             GEOS 150
                                                                             GEOS 131
      MTYFC=MTP(ITAFc)
                                                                             GEOS 182
      ISTA= ISTA+(ITAFE)
                                                                             GEOS 133
      IF (GEOS2F) ISTA=ISTA/10
                                                                             GEOS 166
      1STA=NUU(15TA+10000)
                                                                             GEOS 185
      IF (ISTA:EQ:0) CU TC 700
                                                                             GEDS 136
      IF ( ISEL.LE. 0) GO TO 660
                                                                             GEOS 187
C CHECK IF MEASUREMENT HAS BEEN SELECTED
                                                                             GEOS 138
      DC 345 I=1.136L
                                                                             GEDS 135
      IF((.NOT.SGLS#(1)).CR.(MTYPE.NE.ITSEL(1).AND.ITSEL(1).GT.0).OR.
          (IDTA.NE.SCLSTA(I).AND.SELSTA(I).NE.O).OR.IYMD.LT.IYSI(I).OR.
                                                                             GEOS 120
                                                                             GECS 171
          243 CT CO ((I)S2Y1.TD.CMYI
      IF(IYMU.EQ. IYSI(I).AND.IHM.LT.IHSI(I)) GD TO 645
                                                                             GEOS 192
      IF(1770.63.1782(1).AND.1HM.GT.1H82(1)) GJ TU 645
                                                                             GEOS 193
                                                                             GEDS 130
      ISMED=INGO(I)
                                                                             GEOS 195
      .GQ TC 650
                                                                             GEOS 106
  645 CONTINUE
                                                                             GC05 197
   - / GU (Unos?
                                                                             GEOS 196
C CHECK IF MEASUREMENT HAS BEEN DELETED
                                                                             GEGS 199
  650 DO 655 J=1.1SeL
      IF (SELSW(J).OR.(MTYPE.NE.ITSEL(J).AND.ITSEL(J).ST.0).OR.(ISTA
                                                                             GEOS 200
          .NE.SELSTA (J) . AND. SELSTA (J) .NE. O) .DR . IYMD .LT. [YS1 (J) . DR.
                                                                             GEOS 201
                                                                             GEOS 202
          IYMD.GT.1Y52(J)) GO TO 655
       IF(IYMJ.EQ.IYS)(J).AND.IHM.LT.IHS1(J)) GO TO 635
                                                                             GFDS 203
      IF (IYWO.EQ.IYS2(J).AND.IHM.GT.IHS2(J)) GO TO 655
                                                                             GEUS 204
                                                                             GEOS 205
      GU TÜ .037
                                                                             GEOS 206
  655 CONTINUE
                                                                             GEOS 207
  660 ISN#ISTA
                                                                             GEOS 208
       ID=ID4(ITAPE)
                                                                             GEOS 209
       ITEMP=ISCR
                                                                             GEOS 210
       IF (KTYPE, EQ. 4. AND. ID. EQ. 5) I TEMP=DATP
                                                                             GEOS 211
       IF (.NCT.NURATE) GD TO 15
                                                                             GECS 212
       IF(MTYPE.NE.3.AND.MTYPE.NE.4) GO TO 16
                                                                             GEOS: 213
       IF(NS1G+LE+0) GD TO 17
                                                                             GEOS 214
      NN1=0
                                                                             GEOS 215
C DETERMINE IF SIGMA IS CHANGED
                                                                             GEOS 216
      DC 15 1=1.NSIG
                                                                             GEOS 217
       IF(ISN.NE.ISTNE(I).AND.ISTNO(I).NE.C) GO TO 15
       IF(3.LO.IMTYPE(I).OR.IMTYPE(I).EO.O) NNI=I
                                                                             GEOS 216
                                                                             GEOS 219
   15 CONTINUE
       IF(NN1.GT.Q.ANC.SIGCHG(NN1).NE.O.) NORATE=.FALSE.
                                                                             GEOS 220
                                                                             GEOS 221
       GO TO 10
                                                                             GEOS, 222
   17 NORATE= . FALSE .
                                                                             GEOS 223
    16 - 15TA= 15N
                                     REPRODUCIBILITY OF THE
```

ORIGINAL PAGE IS POOR

C CHECK FOR STATION FRESENT	GEOS 224
ISN=NUMUR2(ISTA, ISTANO, NSTA)	GEOS 225
IF (15N+GT+0) CC TO 73	GEOS, 55,6
, ISN=NUMBR2(ISTA, ISTARD, NSTARD)	GEOS 227
IF(15N+GT+0) GC TO 71	GCOS 228
ISN=NUMBR2(ISTA.STANOS.NOSTCR)	GEOS 229
IF(13N-GT-0) GL TO 71	GEOS 230 GEOS 231
IF(15TA.EQ4.AND.VTYPE.EO.S.AND.ID.EQ.O) GO TO 71	GEOS 232
PRINT 3000, ISTA	GEOS -233
GC TO 637	GEOS 234
71 NSTA=NSTA+1	GEOS 235
ISN=NSTA	GEDS 236
ISTANU(ISN)=ISTA	GEOS 237
73 IF(15.L.,LE.0) CO TC 72	GEDS 238
<pre>K=M1YP⊆ KTYF==M00(K,19)</pre>	GEOS 239
K=IIMCD(ISN,KIYPE)+1	GEOS ZAO
K=MCD(K,ISMCD)	GEOS 241
C WRITE SELECTED MEASUREMENTS ON SCRATCH FILE	GECS 242
ITMOD (ISN, KTYFE) =K	GEOS 243
IF(K.NE.0) GO TO 627	GEOS 24A
72 WRITE (ITEMP. 2010) ISAT (ITAPE) - MTYPE - ID - IST4 (ITAPE) - IT4 (ITAPE)	
• ISN, IYMD, IFN, S4 (ITAPE), (A(J, ITAPE), J=1, 12)	GEOS 256
IF (NET NEW TAF) GO TO 637	GEOS 247
K=1STANU(1SN) +10	GEDS 248
C END FILE AND REAIND SCRATCH FILE	GEOS 249
WRITE (NEWTH, 2000) ISAT(ITAPE) +MTYPE +ID +ISTA(ITAPE) +ITA(ITAPE)	
1YMJ, 1HM, 54(1TAPE), (A(J, ITAPE), J=1, 12)	GEOS 251
60 10 037	GECS 252
20 ENDFILE ISCR	GEOS 250
REWIND ISCR	GEUS 254
ENCFILE DATP	G £05 2 55
REWINC DATP	GEOS 256
VFFCHN=.FALSE.	GEOS 257
IY=oTHUE.	GEOS 258
IM=0	GEOS 259
C READ DOPPLER FILE AND FILL FREQUENCY TABLE	G EOS 260
NOCF=0	GEOS 261
DJEASE=YMDAY(5(0100,0.0.D0)	GE05 262
30 REAL(CATP, 2020, END=40)DSTA(NDOP+1), IYMD, IHM, SEC, dFREQ(NDOP+1)	GEOS 263
NDOF=VOJE+1	GEOS 234
DT INE (NOUP) = YMCAY (1YMD . 1 HM . SEC) + 1 . D C/14 4 0 . D 0	GEOS 265
' [F(NDUP.LT.60C) GD TO 30	G EOS 2 66
PRINT 10000	GEOS 267
40 REWING GATP	6 508 268
50 REAL(ISCR.1000.END=60)ISATID.MTYPE, ID.IST.IT.ISN.IYMD.IHM.SEC	
C READ FIRST RECORD FOR EACH DESERVATION	GEOS 270
SATSAT=.FALSE.	GECS 271
CHANEL=0	. GEOS 272
C STATION AND TYPE ZERO FOR LAST CESEFVATION STORED	· 6508 273
IF(ISK-GT-0) CC TO 70	GEOS 274
60 RENING ISCH	GCOS 275
15TA=0	GEOS 276
MTYPE=0	GEOS 277
RECND=RECND+1	GEOS 278
PRINT 5000. NUMBER. (IDTAPE(I). I=1.NTAPE)	GEOS 279
REPRODUCIBILITY OF THE	
ORIGINAL PAGE IS POOR	
OTMOTTIME	

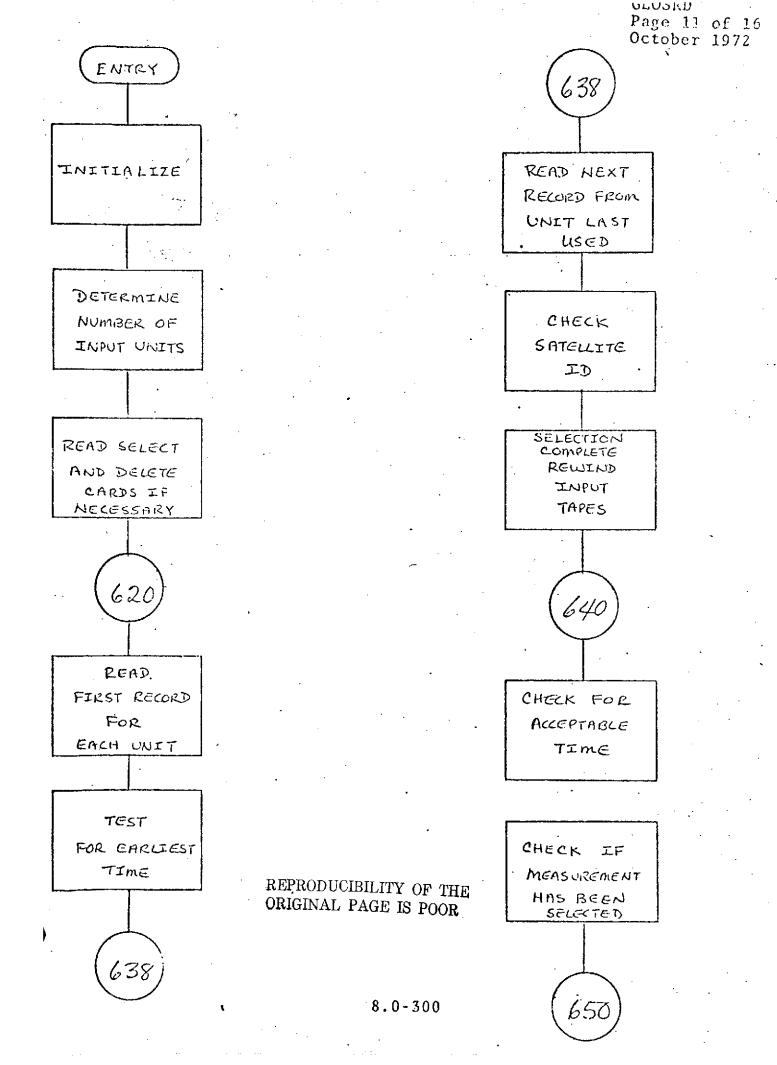
```
CALL HANDWR
                                                                           GE05 280
      TM=U
                                                                           G605 281
C COMPUTE MEASUREMENT TIME IN A.1 DAYS FROM REFERENCE JAN 0.0
                                                                           GEOS 232
      DAYSTP=DAY
                                                                           GEOS 233
     RETURN
                                                                           GEOS 234
   70 DAY=YNJAY(IYNC.IHM.SEC)
                                                                           GDOS 255
      IF(IT.EG.7) IT=4
                                                                           GEOS 23€
      1F(1T. 20.0.0.0K. 1T. GT. 4) 1T=3
                                                                           GEOS 287
      DAY=DAY+TUIF(4,IT, CAY)/8640C.
                                                                           G502 SH
      IF (CAY-LT-CATACE) OU TO 180
                                                                          ·GEOS 239
      IF (EAY OT DAYSTP) GO TO GO
                                                                           GEOS 290
      KMEAS=1
                                                                           GEOS 291
      SIG2=0.
                                                                           GEOS 292
      IND=0
                                                                           GEOS 203
      IPRE=0
                                                                           GEOS 294
      PRETYP=0
                                                                           GEDS 295
      ISATNC=NUMBR4(ISATID.ISAT2.NSAT)
                                                                           GEOS 296
      MT=MTYPe
                                                                           GE05 297
      IF (MTYPE, EQ.4) MT=3
                                                                           GEOS 296
      IF (MTYPE.EG. 0) MT=26+ID
                                                                           GEDS 299
      IF(WIYPE.EU.9) MISID
                                                                           GEOS 300
      KSTA= ISTANO (ISN)
                                                                           GEOS 301
C DETERMINE PREPROCESSING TO BE DONE
                                                                          GEOS 302
      1F(NPAE . EU . C) (C) TC 100
                                                                           GEOS 303
      CO 75 I=1.NPRE
                                                                          GEOS 304
   75 IF((INUPRE(1,1),EQ.O.OR.INDPRE(1,1),EO.KSTA).AND.
                                                                          GEOS 305
        GEOS 306
     * IF ( INL. 60.0) 66 79 100
                                                                          GEOS 307
      SRENDX=REINDX(1, INC)
                                                                          GEOS 303
     JECTEVEL (TOTAL LACTOR), DAY=CAM+RETNEX (SOTING) ASSOCIATED
                                                                                365
                                                                          G#US
      IPRE=IPREPR(1+IND)
                                                                          GI:US 310
      PRETYP=IPAEPR(2, INC)
                                                                          GE05 311
      IF(IPAC.EQ. 1) IPAE=1-1ST/5
                                                                          GEC5 312
C DETERMINE SIGMA CHANGES IF ANY
                                                                          GEOS 313
  100 NN1=0
                                                                          GEOS 314
     NN2=0
                                                                         . GEOS 315
      IF(NSIG. 60.0) 60 TC 103
                                                                          GEOS
      DD INC I=1.NSIG
                                                                          GEOS
      IF(KSTA.NE.IST NO(I).AND.ISTNO(I).NE.0) GO TO 106
                                                                          GEOS
      IF(MT.Eq. IMTYPE(I).OR.IMTYPE(I).EQ.C) NV1=I ...
                                                                          GEOS 319
      1F(MT.GT.7) GC TO 106
                                                                          GEOS 320
      IF(MT+7.=0.IMIYPE(I).OP.IMTYPE(I).EC.O) NN2=I
                                                                          GEOS
 106 CONTINUE
                                                                          GEOS 322
C PROCESS AND READ SECOND RECORD ACCORDING TO MEASUREMENT TYPE
                                                                          GEOS 323
C ... OPTICAL, AZIMUTE & ELEVATION
                                                                          GEOS 324
  108 GO TO (110.120.130.130.150.160.110.170.290).MTYPE
                                                                          GEOS 325
110 REAC(ISCR.1010) MI.NI.OHSOI.IS.NZ.NZ.OBJJZ.IMEAN, IEQAT.SIGI.SIGZ
                                                                          GEOS 326
                                                                          GEOS 327
      CALL DINRAD (OUSI, MI, NI, OBSO1, MTYPE+1)
                                                                          GEOS 320
      CALL DINKAD (UBS2.M2.N2.UBS02.1)
                                                                          GEOS 329
      IF(IS.ED. MINUS JOBS2=DSIGN(DES2,-1.DC)
                                                                          GEOS 330
      IF(NH1.31.0) SIG1=SIGCHG(NN1)
                                                                          GEOS 331
      IF(NN2.GT.0) SIGR=SIGCHG(NN2)
                                                                          GECS 332
      COSD=LCUS(CB52)
                                                                          GEOS 333
      SIG1=5161 #52R
                                                                          GEOS 334
      IF (IND.NE.O.UR.NN1.GT.O) SIGI=SIGI/COSD
                                                                          GEGS 335
```

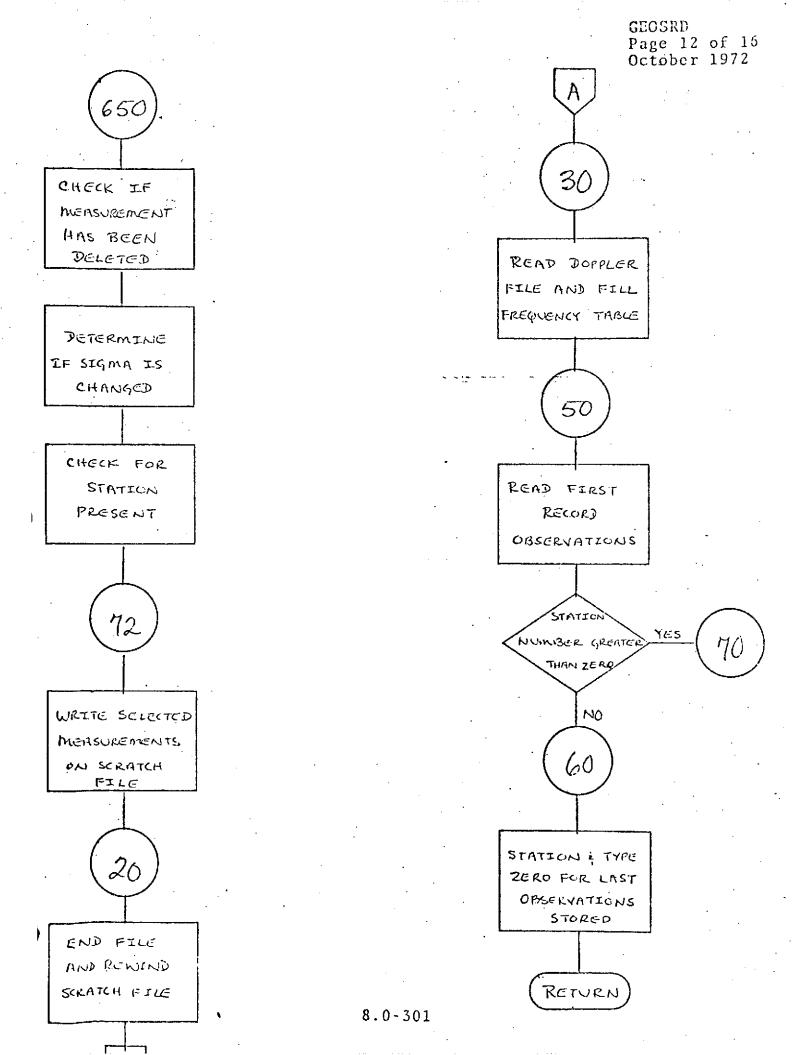
```
. GEOS 336
      S162=5162#52R
                                                                            GEOS 327
      16 (*TYPe+Ne+1) 60 TO 400
                                                                            GEOS 338
      PRETYP=0
     IF (IND. 20.0.0%. IPREPR(4, IND). EC. 0) CO TO 400
                                                                            GECS 339
                                                                            GEDS 340
      PRETYP=1
      IF (ID-E0.0.AND.(ISATID.E0.IGEOSA.OR.ISATID.E0.IGEOSI))
                                                                            GEOS 301
         EAY=BAY+BATCLC(IY.DAY+TDIF(3.0.DAY)/5.6456)/8.6464
      IF (10.Eu.O.AND: (ISATID.EG.IGEOSE.DR.ISATID.EG.IGEOSZ))
                                                                            GEOS 143
                                                                            GEOS JAA
     BAY=DAY+SATCL2(IY+DAY+TBIF(3+4+DAY)/3+64E4)/3+64E4
                                                                            GEOS 365
      IF (10. EU. O. AND . (ISATID. EO. IGEOSI. OR . ISATID. EO. IGEOSA. OR.
                                                                            GROS BAS
         ISATIO . EG. ICEOS 2. OR. ISATID . FO. IGEOSE) ). IPRE=0
                                                                            GEOS 347
      TIN=INEAN accal
                                                                            GEOS 343
      IF (TIN AND VICUAT . EC. 3) GO TO 400
                                                                            GEOS 309
      DECATR=UJ6ASE
                                                                            GEOS 350
      IF ( /cGAT.ed.2) DEGATR=0.DO
                                                                            GEOS 351
      IF(Jegat.eg.3) DEGATR=DAY
                                                                            GECS 352
      X(1)=DCOS(GES1) #CCSD
                                                                            GEOS 353
      X(2)=USIN(UB$1)#COSD
                                                                            GEOS 354
      X(3)=USIN(OUS2)
                                                                            GEOS 335
      CALL EGUATR (X.DEGATR.TIN.X.DAY..TRUE.)
                                                                            GEOS 355
      3851=DATAN2(X(2),X(1))
                                                                            GEDS 357
      IF(Costactau.cc) OBSI=0851+CTWOPI
                                                                            GEDS 356
      DBS2=CARSIN(X(3))
                                                                            GEOS 359
      GO TO 4-00
                                                                            GEOS 300
C ...RANGE
  120 REAU(13CK, 1020) DBS1.ISCCR.ITR.IRC. ITROP.SIG1.REFRAC.
                                                                            GEOS 351
        IVALID . CHANEL
                                                                            GIOS 362
      IF (IVALIDALTA 6) GO TO 123
                                                                            GEOS 363
                                                                            GEOS 364
      IF(ISCUR.GT.1)) ISCOR=ISCOR-100
                                                                            GÉOS
      UAY=LAY+UFLOAT(ISCOR)/A.646+10
                                                                            GEUS 346
  123 IF (NN1+G1+0) SIG1=SIGCHG(NN1)
                                                                            GEDS
      IF (PRETYP.EQ. 1.AND.(ITROP.EQ. 1.OR. ITROP.EQ.3)) PRETYP=0
      IF(ITROP.NE.9.CR.PRETYP.LE.O) GO TO 125
                                                                            GEOS 358
      PRETYP=3
                                                                            GEOS 360
      SEFNUX=REFRAC.
                                                                            G905 370
  125 IF (IPAE.LE.O) CO TO 400
                                                                            GEOS 371
      IF(INC.GT.O) DAY=DAY-08S1/(C#8.64D4)
                                                                            GEOS 372
                                                                            GEOS 373
      IPRESCHANEL+1
                                                                            GEOS 376
      GC TU 400
C ...RANGE HATE & DUPPLER
                                                                            GEOS 375
  130 READ(ISCR.1030) C9S1.ITROP.SIG1.CHANEL
                                                                            G505 376
      IF(PRETYP.EU.1.ANO.(ITROP.EC.1.OR.ITROP.E0.3)) PRETYP=0
                                                                            GEOS 377
      IF (MTYPE. EQ. 3) GO TO 135
                                                                            GEOS 37%
      MTYFE=3
                                                                            GEOS 379
      IF(NOCP.EQ.0) GG TC 50
                                                                            GEOS 380
      DO 140 I=1.NOCF
                                                                            GCOS 341
         IF (DAY . GT . DT IME (I) . GR . ISN . NE . DSTA(I)) GU TO 140
                                                                            GECS 332
         GBS1=C*(BFREQ(I)-08S1)/08S1
                                                                            GEOS 383
         SIG1=C*SIG1/BFREO(1)
                                                                           - GEOS 384
  135 1F(KN1.GT.U) SIG1=0.01*SIGCEG(KN1)
                                                                            GEOS 385
      GD TO 400
                                                                             GEOS 336
      CONTINUE
                                                                            GEOS 387
      06 UT 00
                                                                            GEOS 388
C ... MINITRACK
                                                                            GEOS 336
                                             REPRODUCIBILITY OF THE
      REAL(15CR, 1640) DBS1, 0BS2
                                                                            GEOS 300
      SIGNAL=SIGSTD(E)
                                                                             GEOS 391
                                             ORIGINAL PAGE IS POOR
```

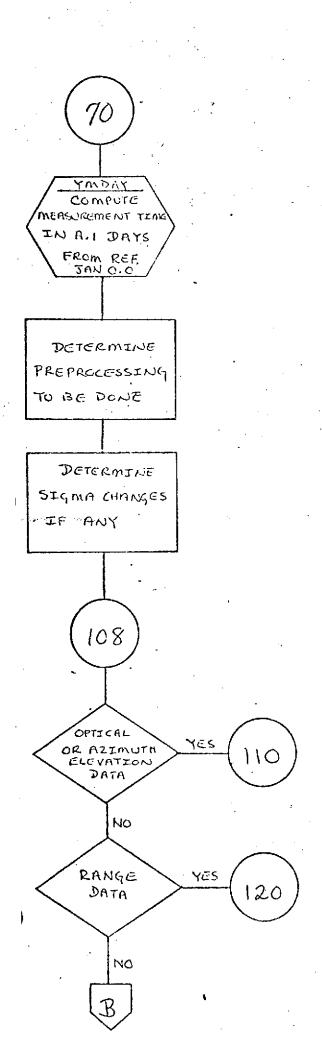
```
enos ana
      $16MA2=51G5TD(12)
                                                                            GEOS 3113
      IF (NN1.ST.C) SIGMA1=SIGCHG(NN1)
                                                                            G505 30A
      1F(NNZ.GT.O) SIGMAZ=SIGCHG(NNZ)
                                                                            GEOS
     ·5161=Cd51*#2
                                                                            GEOS
                                                                                 396
      $1G2=0352**2
                                                                            GCDS 397
      IF(SIGIALTAIA) SIGI=SQRY(1a-SIGI)
                                                                            GEOS 399
      IF($162.LT.1.) $162=$0RT(1.-$162)
                                                                                 399
                                                                           GEGS
     SIG1=51GMA1*1 #E-3/SIG1
                                                                            GEOS 400
      $162# $16MA2*1*6-3/$162
                                                                            GEOS 401
      KMEAS=2
                                                                            GEOS AUR
      GC 10 400
                                                                            GENS 403
C ... X-Y ANGLES .
                                                                            GEOS 404
150 - READ(ISCR, 1030)0051, 0852, SIG1, SIG2
                                                                            GEOS 405
      NMEAS=2
                                                                            GEDS 406
      C851=G851*D2R
                                                                            GECS 407
      0852=0852*02R
                                                                            GEOS 405
      IF (NN1.GT.0) SIG1=SIGCHG (NN1)
                                                                            GEOS 609
      IF (NN2.GT.J) SIG2=SIGCHG(NN2)
                                                                            GEOS 410
      $161=$161#$2K
                                                                            GEUS 411
      $1 G2= S1G2 #52R
                                                                            GE05 412
      004 UT: CD
                                                                            GEOS 413
C ...TIME DELAY: FIRING PATE, 2 6 3 WAY AVERAGE RANGE RATE
                                                                            GEOS ATA
  170 REAL(15CK.1080) ITCCR.ITHOP.10N.1ST42.03S1.08S2
                                                                            G505 415
     .DAY=CAY+OFLOAT(ITCOR)/8.640+10
                                                                            GEOS 416
      IPRr=I
                                                                            GEOS 417
      WTYFE=20+ID
                                                                            GEOS 418
      SIGNAI=SIGSTO(NTYPE)
                                                                            GEOS 419
      IF(NN1.GT.O) SIGMAI=SIGCHG(NN1)
                                                                            GEDS 420
     SICI=SIGIAI
                                                                            GE03 A21
      IF (PRETYPIGT. 0) PRETYPAPRETYP-1+1TRCP
                                                                            GEOS 427
      IF (PRETYPOLEOU) GO TO 172
                                                                            GEOS 123
      IND2=0
                                                                            GEOS 424
      RFNLX(2)=0.
                                                                            GEOS 425
      DO 171 1=1+NPRE
                                                                            GEDS 426
  171 IF((INDPRE(1, I).EQ.O.OR.INDPRE(1,I).EQ.ISTA2).AND.
                                                                            GEOS 427
         (INDPRE(2.1).50.0.0R.INDPPE(2.1).60.MTYPE)) IND2=I
                                                                            GEOS 428
      IF(IND2.GT.O) HENDX(2)=RFINDX(1.IND2)
                                                                            GEBS 420
  172 ISK2=NUMBR2(ISTA2, ISTANO, NSTA)
      IF (15K2.GT.O) CO TO 175
                                                                           GEOS 430
                                                                            GEOS 431
      ISN2=NUMBR2 (ISTA2.ISTAPD.NSTARD)
      IF(ISN2,GT.0) 00 TC 173
                                                                            GEDS 432
                                                                            GEOS .433
      ISN2=NUMBR2(ISTA2, STANDS, NOSTOR)
                                                                            GECS 434
      IF(15N2.GT.0) CO TC 173
                                                                            GEO$ 435
      PRINT 3300, 15142
                                                                            GFOS 431
      GO TO 50
  173 NSTA=NSTA+1
                                                                            GEOS 437
                                                                            GEOS 436
      ISN2=N5TA
                                                                            GEOS 435
      ISTANC(ISN2)=ISTA2
                                                                            GEOS 440
  175 CHAREL=ISNZ
                                                                            GEOS 441
      516(2)=0052
                                                                            GEOS 442
      IF(LdA52.60.0) GO TO 185
      CO 186 I=1.LGASE
                                                                            GEOS 463
      IF(ISN.NE.JEASE(I)) GO TO 186
                                                                            GEOS 444
                                                                            GEOS 445
      IF(I5N2.NE.KBASE(I)) GO TO 186
                                                                            GEOS 446
      GC TU 190
                                                                            GEOS 447
  186 CONTINUE
                                       REPRODUCIBILITY OF THE
                                       ORIGINAL PAGE IS POOR
```

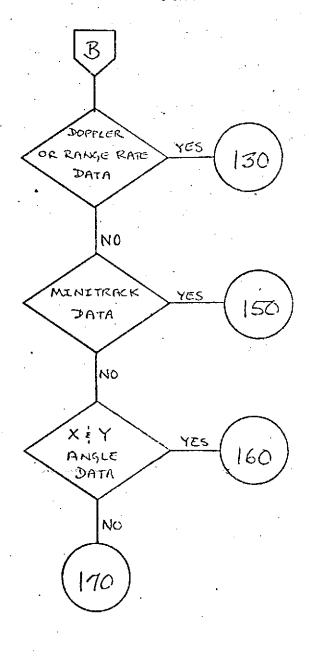
```
GEOS 108
  153 LBASE=LBASE+1
                                                                             GE05 449
      JOASc (LOASe ) = ISN
                                                                             6005 450
      KUASE (LBASE) = ISN2
                                                                             GCOS 451
  190 'GO TO (177, 178,179,179), TD
                                                                             GEOS 452
  177 51G1#5[G1#1#JE=9
                                                                             GEOS 453
      GO 10 400
                                                                             GEOS 454
  178 SIG1=5101 41 + 08-5
                                                                             G50$ 455
      GD TO 440
                                                                             GEOS 456
  179 DUS2=CAY-0852/6.640+8
                                                                             GEOS 457
      SIG1=SIU1 #1'+06-2
                                                                             GEOS 458
      GO TO 400
                                                                             GEUS 159
130
      REAL(ISCH.LOUG)
                                                                             GEOS 460
      GU TU SO
                                                                             G505 461
  290 J=10-1
                                                                             GEDS 462
      GO TO (292,393,494),J
                                                                             GEOS 463
  272 REAC(15CR.1092) IREFR. DBS1. SIG1. IRELAY, CHANEL
                                                                             GEOS 464
      CHANEL=CHANEL=1
                                                                             GECS 465
      IF(NN1.GT.O) SIGI=SIGCHG(NN1)
                                                                             GEDS 466
      GO 10 90
                                                                             GEOS 457
  393 READ(ISCR, 1093) TREFR, DRSI, SIG1, TRELAY
                                                                             GEOS AGB
      IF(AN1.GT.O) SIGI=SIGCHG(NN1)*0.01
                                                                             GEOS 469
   90 IF (PRETYP.GT.O) PRETYP=PRETYP-MOD(IREFR.2)
                                                                              GEOS 470
      UNTAS] =L
                                                                              GEOS 671
      J=MCD(J:2)+1
                                                                             GEOS 472
      IF (IRCLAY + CC + ISAT2(J)) GO TO $2
                                                                             G50S 473
      PRINT 6000, IRELAY
                                                                              GEOS 474
      GU 10 50
                                                                              GEOS 475
   92 KKSAT=J
                                                                              GENS 476
     OI#JOYTM
                                                                              GEDS 477
      TPREET
                                                                              GEOS 476
      JBS2=DAY
                                                                              GEOS 479
      SATSAT= . TRUE .
                                                                              GEOS 430
      GO TO 400
                                                                              GEOS 481
  494 REAE(13CR.1093) IREFR.OB51.51G1.51G2.1GEU.OF52
                                                                              GEBS A62
     . IF(IST.EQ.O) CALL SATCL3(DAY)
                                                                              GEOS 493
       [F(ANI.GT.O) SIG1=SIGCHG(NN1)
                                                                              GEOS ARA
       IF (NN2.GT.O) SIGZ=SIGCHG(NN2)
                                                                              GEOS 445
       $162=$162 #U.U1
       IF (PRETYP.GT.U) PRETYP=PRETYP-MOD(IREFR.2)
                                                                              GEDS 436
                                                                              GEOS 487
      KMEAS=2
                                                                              GEOS 188
       GI=39YTM
                                                                              GEOS 489
  400 IF (NOULL . EQ . 0) GO TO 420
                                                                              GEOS 400
C CULL MEASUREMENTS
                                                                              GEOS 491
       DC 415 I=1.NCULL
                                                                              GEDS 492
       DU 416 J=1. NMEAS
                                                                              GEOS 493
       IF(1M+J-CULL(1.1)) 415,413,411
                                                                              GEOS 494
 411 IF(1M+J.GT.CULL(2.1)) GD TO 415
                                                                              GEOS 405
   413 SIG(J)=0.000
                                                                              GEOS 496
   <15 CONTINUE
                                                                              GEOS 427
  420 IN = IM+NMEAS
                                                                              GEOS 498
C SET PREPRUCESSING SWITCH
                                                                              GEOS 499
       PREFRUEIND NE . C. AND . NPRE . NE . O
                                                                              GCOS 500
       PREFROMPREPROFOR MTYPE GT . 26
                                                                              GC05 501
       IF(SAISAT) PREFROM TRUE
                                       REPRODUCIBILITY OF THE
                                                                              GEOS 502
       PRETYP=PRCTYP+10*IFRE
                                       ORIGINAL PAGE IS POOR
                                                                              GEOS 503
       NUMBER=NUMBER+NMEAS.
```

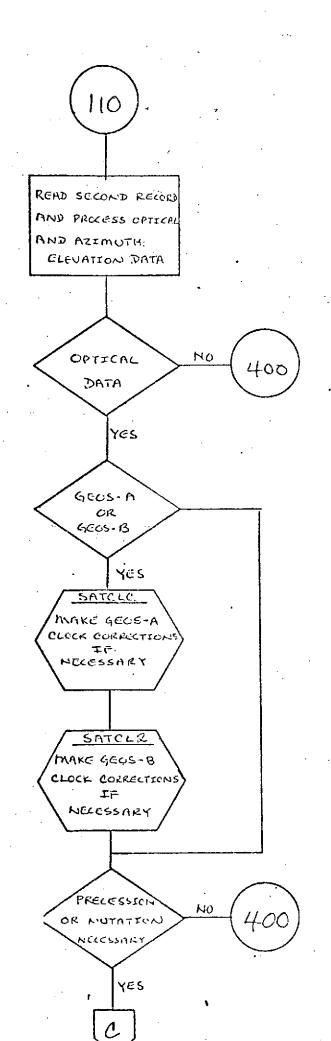
•	ISTA=ISN	GE 35	501
	1F(NTYPs+GT+7) GD TU 425	GEAS	5 C C
	CHANEL=CHANEL+1	GEOS:	507
	IF(IL-GT.O) CHANEL=0	GEOS	507,
625	RECNUÉRICHO+1	GECS	508
-20	IF(NdIA5+GT+0) CALL BIA5	GEOS	509
	CALL HANDING	GEDS	510
	\$16(2)=0.000	GEOS	511
	GO 10 50	GEOS	512
1000	FCRMAT(16,211,3X,211,1X,14,15,16,46,4)	GECS	513
1010	FCHMAT(13,12,05,3,A1,212,FA,2,8X,211,8X,2F3,2)	GEOS	51 -
	FCRNAT(019:3,212.4X,11:F6:3:F6:4:1X:11:1X:11)	GECS	515
	FCEMAT(D19.3,10X,11,10X,F3.2,2X,11)	G ∄CS	516
	FORMAT(JX+U6+7+F6+7)	GEOS	517
1050	FURNAT(D5.2.5X.F5.2.22X.2F3.2)	GCOS	518
	FORMAT(12.211.14.022.16.016.5)	GEO\$	519
	FCRMAT([1,D19%2,F6%3,[6,[1]]	GEDS	520
	FCRNAT(11,D19.0.3PFC.3.16.11)	G 505	521
	FORMAT(11,D19,2,F3,1,F3,2,711,D19,6)	GEC'S	522
	FORWAT(16.211, A4.A1.15.216, A4.A2.11A6)	GEUS	523
	FDEMAT(10.211.44.A1.15.216.A9/A2.11.44)	GEGS	524
	FCRNAT(14X,14,15,14,F6,4/D19,3)	GdDS	525
	FORMAT(IN . *STATION *,14,* NOT FOUND IN FILE*)	G5.05	526
3000	FORWAT (1HO, 20x, ***** OVER 200 COPPLER PASSES-TABLE OVERFLOW ***		
10000	FURNAT(AC.2(16.1X.16.5X).1X.14.1X.11.12)	GEUS	52%
4000	FORMAT(THUZZETX, 16, * CUSERVATIONS SELECTED FROM MASTER GEOS *.	GEOS	
5000		GEOS	
	. 'DATA TAPE NUMBER(S)'.41') FORMAT(' RELAY SATELLITE'.10.' NOT PRESENT')	GEOS	
., ., 60,00	$oldsymbol{\cdot}$	GEOS	
	END		

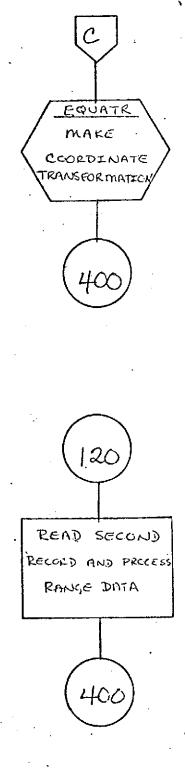


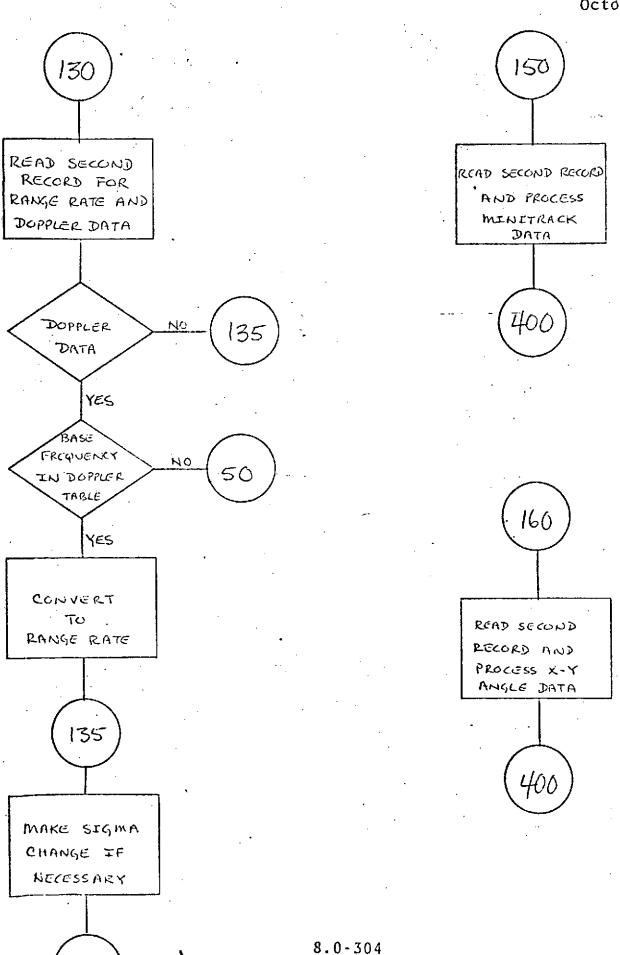




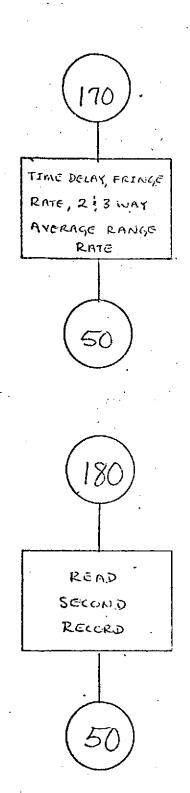


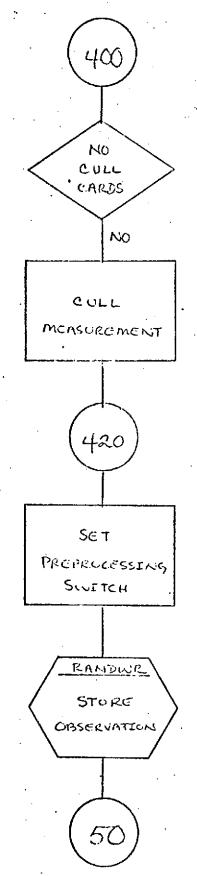






400





GRHRAN

DESCRIPTION.

GRHRAN is a real valued DOUBLE PRECISION function which

- Computes the right ascension of Greenwich,
- calculation of the computed measurements and used in the calculation of the measurement partials.

NAME **GRHRAN**

ENTRY POINT PURPOSE

GRHRA1 INITIALIZATION

GRHRAN TO COMPUTE THE RIGHT ASCENSION OF GREENWICH AND

THE SATELLITE VECTORS USED IN COMPUTING

MEASUREMENT PARTIALS

CALLING SEQUENCE X=GRHRA1(ENV.NSTA)

SYMEOL TYPE DESCRIPTION

ENV DP INPUT - STATICH UNIT EAST, NURTH, AND VERTICAL

VECTURS (3,NSTA,1)

INPUT - NUMBER OF TRACKING STATIONS **NSTA**

GRHRAL OUTPUT - NOT USED

CALLING SEQUENCE X=GRFRAN(DAY, ISTA)

CESCRIPTION SYMBOL TYPE

DAY INPUT - DESERVATION TIME IN DAYS FROM JAN 0.0 OF DΡ

THE REFERENCE YEAR FOIL THE ARC

ISTA INPUT - STATICK INDEX

CUTFUT - RIGHT ASCENSION OF GREENWICH GRHRAN DP

SUUROUTINES USED EPHEM TRUEP XE#1X YEF1X

COTPRO

CEMMON ELECKS APARAM, CONSTS CEPHEM. CSTHET

> CUYECT INTOLK TRUPUL

IMPUT FILES NONE

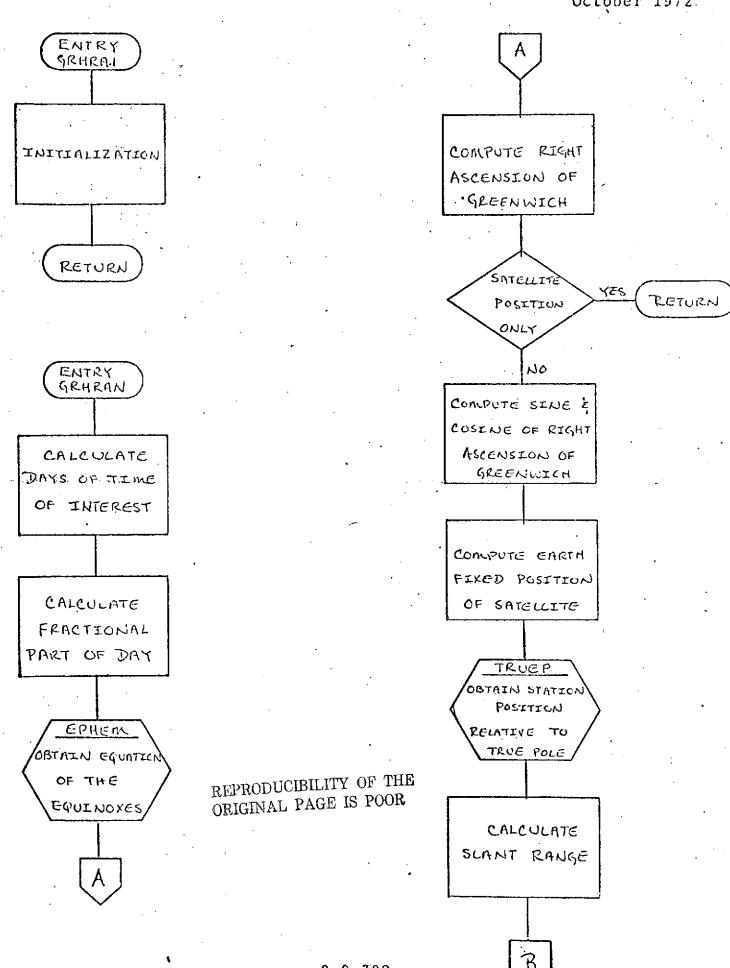
DUTPUT. FILES NONE

REPRODUCIBILITY OF THE

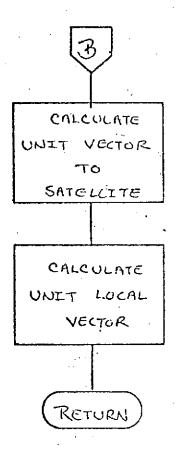
GEOGYN SYSTEMS DESCRIPTION ORIGINAL PAGE IS POOR VOLUME 1 - GEOGYN DOCUMENTATION REFERENCES

DOUBLE PRECISION FUNCTION GRHRAI(ENV.NSTA)	GRHR	40
IMPLICIT REALAS (A-MGO-Z)	GRHR	50
DOUGLE PRECISION MEGOY	GRHR	51
DIMENSION ENV (3.NSTA.1)	GRHR	32
COMMUNICAPARAMIZENPAR (4) INSAT INGPARC (5)	GRHR	53
CCMMUNZCORSTSZEI.DTWUPI.RAD.RSEC	GRHR	54
CCMMUNACE PHEMANO(SA) FEG GERHEM (643)	ЧНИ	ិទី

	COMMON/CSTHET/CTHETG.STHETG	SRHR,	56
	CUMMUN/CUVECT/LHAT (3.2), XYZ(3.2), RXYZ(3.2), RENV(3.2), R(2), RSO(2),	CPRP	57
	• XYSQ(2)	GEHE	53
	CGMMUNZINTELKZIHOOT1.THOOT2.THOT25.CM(24).THETGO.M900Y(33)	GRHR	50
	CG MMC NATROHOF (ATHOR (A)	GPHR	50
	CONNUNZAYZULIZZYZI(C,4)	GRHB	61
	RETURN	GRHR	6.2
	ENTRY GRHRAN(CAY, ISTA)	GRHR	53
С	CALCULATE TIME QUANTITIES NEEDED FOR RIGHT ASCENSION OF GREENWICH	GRIHR	څخ
C		GRHS	65
	DAYS UF TIME UF INTEREST	GRHP	÷ 66
	12=10 INI (2AC) INI (01=\$T	GRIHR	- 57
¢	***FRACTIONAL PART OF CAY OF TIME OF INTEREST	GRHR	63
	T3=CAY-T2	G RHP	6.9
¢	COMPUTE EQUATIONS OF THE EQUINOXES	GRHP	70
	CALL EPHEM(DAY, TRUE.)	GRHR	71
c	COMPUTE RIGHT ASCENSION OF GREENWICH	GRHA	72
	GRHRAN=THETCV+TR=THOOT1+T3~THOCT2+EC	GRHR	73
	GRHRAN=DNOC (GREPAN DTWOPI)	GRHR	76
C	TEST IF ONLY SATELLITE POSITION IS WANTED	GPHR	75
	IF(ISTA.E0.0) RETURN	GRHR	76
	STEATG=351N(GGFRAN)	SRHR	77
	CTHET GEOCOS (GREAN)	GHHR	7.3
¢	DBTAIN STATION PUBLICON RELATIVE TO TRUE POLE	GEHR	79
	CALL TRUEP(CAY,ISTA)	GPHR	30
¢	OBTAIN EARTH FIXED POSITION OF SATELLITE	GRHR	31
	DC 350 L=1.N5AT	GRIHR	32
	XYZ(1.L)=XEFIX(XYZI(1.L).XYZI(2.L))	GRHR	33
	XYZ(2.L)=YEF1x(XYZ1(1.L).XYZ1(2.L))	GRHR	8.4
	*************************************	GRUTT	ت ز
C	CALCULATE SLANT RANCE	GHHH	40
	95G(L)=0.000	GRHR	37
	00 300 1=1.3	GRHR	35
	RXY&(1,L)=XY&(1,L)~TRUE(1)	GRHR	3.9
	RS9(L)=RS0(L)+FXYZ(1,L)**2	GRHR	30
	300 If(1,EQ.2) XYSC(L)=RSQ(L)	GRHR	91
	** R(L)=05GRT(R5G(L))	GRHR	2.2
C	CALCULATE UNIT VECTORS TO SATELLITE	GRHR	93
	DO 325 1=1.3	GRHR	. 94
	325 UHAT(1.L)=KXYZ(1.L)/R(L)	G RHR'	95
C	CALCULATE UNIT LUCAL VECTOR	GRHR	75
	DC 350 1=1.3	GRHR	27
	350 RENV(I,L)=DCTPRD(UHAT(1,L),ENV(1,ISTA,II)	GRHR	ع ڊ
	RETURN	GRHR	öö
	END	GRHR	100



8.0-309

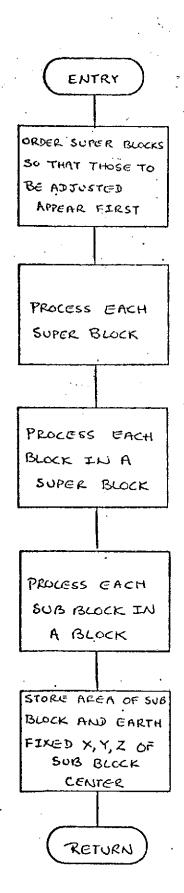


NAME	1 NDENT			
PURPOSE	TO COMPUTE X.Y.Z'S AND APEA OF SURFACE DENSITY BLOCKS CALL INDENT(SIG, ADENSE, AREA, CENTER, BLKLOC)			
CALLING SEQUENCE				
SYNEOL TYPE	DE SCPI PTI ON			
51G CP (1)	QUIPUT - SIGNAS OF ACJUSTED SUFFACE DENSITY			
ACENSE DP	DUTFUT - A PRICRI VALUES OF ADJUSTED SURFACE DENSITIES			
DENSE DP	DUTPUT - SURFACE DENSITY VALUES			
AREA DP	OUTFUT - SURFACE DENSITY SUB-PLOCK AREAS			
CENTER DP (2.1)	OUTPUT - THE GEOCENTFIC COORDINATES OFFFE SUB-BLOCK CENTERS			
BLKLOC DP (2.1)	DUTPUT - LATITUDE AND LONGITUDE OF BLOCK CENTER			
SUBFOUTINES USE	DELTAZ APEAS			
COMMON PLOCKS	CONSTS CPARAM FLXELK INTELK VPBLOK			
INPUT FILES .	NONE			
DUTPUT FILES	NONE.			

	·		
	SUBROUTINE INDENTISIG.ADENSE.DENSE.AREA.CENTER.BLKLOC)	INDE	39
	IMPLICIT FLAC #8(A+H+C+Z)	INDE	40
	LOGICAL CMPCPF	INDE	41
	INTEGER #2 NEAT+NECH+NEXT	BONT	42
	REAL DEAT & LON SIGD & CEN	INDE	43
	DIMENSION SIG(1) +AD INSE(1) +DENSE(1) + AFEA(1) + CENTER(3+1).	1405	44
	• BLKLCC(2 •1) •NEXT(675)	INDE	45
	COMMON/CONSTS/DEL ,CTWOPL ,CEGZEC , CESEC	ING	46
	COMMUNICACH EMINETY * VARIAN * VETEST * VETEN	TINDIT	47
	 NCSTST-CMPGPR-LIMI-LIMZ-ABLOCK-MADJ-NTIOST-NTICEN-INNES*. 	INDI	49
	• MOUNST HICCONS	INDE	45
	- CUMMONZELXVEKZSLAT(675) (SECN(675))(CLAT(675))(CLON(675))	INCE	50
	COMMONZINIBLKZTHOCTS(3),GM,AE,ACSC,FLAT,FS032(59)	20MI	5.1
	COMMONZ VARUER // EN (675) + SIGE (675) + NEAT (675) + NEAR (675) + NSUP ER +	IND	52
	• KSU-F(224)	INOU	57
	DAITA DISHLAT (NEGLEN/2)(2/	1003	5.4
C	GROLF THE SEPTE BLOCKS SO THAT THOSE TO BE ADJUSTED APPEAR FIRST	INE	55
	•		

```
TNOS
      NSUS=NSBLAT *NSBLCN
                                                                               INDE
                                                                                      57
      F1=1.UD C-FLAT
                                                                                      533
                                                                               INCE
      F150=F14F1
                                                                                      59
                                                                               INDE
      F2F=FLAT+(2.000-FLAT)
                                                                               INDE
                                                                                      60
      NB LOCK = C
                                                                                INDE
                                                                                      61
      NADJ = C
                                                                               INDE
                                                                                      62
     : ISLS
            ,= C
                                                                                3 CM I
                                                                                      63
      M = C
                                                                                      64
                                                                               INDE
      DO 10 N=1 .NSUPER
                                                                                      65
                                                                                INDE
      IF($160(N) .CG. 0.)GC TC 10
                                                                                      €€.
                                                                                I NOE.
      M=N+1
                                                                                      £7
                                                                               THISE
      NE XT(M) =N
                                                                               INTE
                                                                                      68
   15 CONTINUE
                                                                                INDE
                                                                                      é c
      DD 20 N=1 .NSUFFR
                                                                                      70
                                                                                INDE
      IF (SIGD (N) .NE. 0.) GU TC 20
                                                                                      7:
                                                                                INDE
      M = M + 1
                                                                                I NOE
                                                                                      72
    N = XT(M) = N
                                                                                      73
                                                                               INDE
   SO CONTINUE
                                                                                      74
C THE DO LOUP TO STATEMENT 500 PROCESSES EACH SUPER BLOCK
                                                                                THOR
                                                                                      75
                                                                               INDE
      DO 500 NS=1 NSUPER
                                                                                INDE
                                                                                      71
      N=N: XT(NS)
                                                                                EGNI
                                                                                      77
      LA 1=NLA T(N)
                                                                                      7 c.
                                                                                INDI
      LON=NLCN(N)
                                                                                INDE
                                                                                      75
      IF(SIGD(N) .NE. O.) NADJ=NADJ+LAT+LON
                                                                                INDE
                                                                                       ٤¢
      REAT =DEAT(N)
                                                                                INDE
                                                                                       21
      RECN =DLCN(N)
                                                                                INDE
                                                                                       82.
      PLATE SECTION
      REON2 =REDN *. EDC
                                                                                INDE
                                                                                       83
                                                                                INDE
                                                                                       E۵
       TLAT =FLAT/OFLOAT(NSBLAT)
                                                                                INDS
                                                                                       85
    1 TLAT2=TLA T#C.5DO
                                                                                       86
                                                                                INDE
     - TLON = FRECH & FLOAT (NSBLON)
                                                                                1991
                                                                                       €7
       TECN2 = TECN ** EDO
                                                                                       e e
       BEGLAT= SLÅT (N)+DF LOAT (LAT) #FLAT 2
                                                                                INDE
                                                                                INDE
                                                                                       69
      BUGLON= SLON(N) -OF LOAT (LON) *FLON2
                                                                                INSE
C THE DO LIGHES TO 400 AND 450 PROCESS EACH BLOCK IN A SUPER BLOCK
                                                                                       50
                                                                                INDE
                                                                                       91
      CO 450 LT=1 .LAT
                                                                                INDE
       BEIGHN #BIGLION
                                                                                       92
       CUNEAT=BUGLAT+REAT2
                                                                                INDE.
                                                                                       ÇΞ
                                                                                INDE
      DO 400 LN=1 +LON
                                                                                       55
                                                                                INCE
       NB LCCK=NF LCCK+1
C STORE BLOCK CENSITY AND UNCERTAINTY REPRODUCIBILITY OF THE
                                                                                INDE
                                           ORIGINAL PAGE IS POOR
       DENSH(NDLOCK) HOLN(N)
                                                                                INDE
       IF(SIGL(N) .LO. C.)GC TC 200
                                                                                INDE
                                                                                INDE
       ADENSE ( NBLOCK ) =DEN(N)
                                                                                       50
                                                                                INDE 100
       SIG( NOLDOK) =SIGD(N)
  STORE LATITUDE AND LONGITUDE OF FLOCK CENTER
                                                                               INDE 101
       BUKEUS(1:NBLOCK) =CENEAT
       CHNLON=9! GLN+ PLCN2
       IF (CONLON .GF. .3603) CENLON=CLNLCN-.3603
       IF (CONLON .LT. .0 03) CONLON=CONLON+.3603
                                                                                INDE 10
     . BEKEDG(2+NH LOCK) =CENLON
                                                                                INDE
  200 CONTINUE
                                                                                      1 C
       SUBLATEUD GLAT
       ZUCGIN=CLLTAZ(SUBLAT)
                                                                                INCL
C THE DO LETT TO BEG AND BEG PROCESS FACH SUBBLIDGE IN A PLOCE
                                                                                INDE 11:
       DO 257 LITEUPHIANSBLAT
                                                                                 PICKE
```

	ZEND=CLLTAZ(SUBLAT+TUAT)	INDE 112
• ·	PSI=500LAT+ 1LAT2	INDE 113
	ARIA =AREAS(ZEEGIN,ZUND,TLCM)	IND5-114
	CLON =8CGLN+TLCN2	INDI 115
	SP 51=0 51 N(P SI *01 G2RD)	INDE 116
,	\$P \$1 30 = \$P \$1 \$42	1NOE 117
	CF SI =0 SCR T(1. 60 C- SPSI SO)	1 NDE 118
	PHO=AE*TI/USOFT(F1SGFFZF*SFSISO)	INDE 119
	PCE=FHO*CPSI	1001 100
	RSL=RHD+SPSI	181 JUNE
	DO 303 ENSUBER. NEBLON	INDE 122
	15t8=15t0+1	IND& 123
STO	HE AREA OF SUB-BLOCK AND PARTH FIXED X.Y.Z'S OF SUB-BLOCK CENTER	INDE 124
	AFEA(ISLE)=AFIA	INDE 125
	CENTER(1,15L8) #FCL*DCOS(CLCN*DEG2PG)	INDE 185
	CENTUR(2.1SUB) = RCL +DSIN(CLEN+FEG2FD)	INCE 127
	CENTER(3.1SUP)=9SL	INDE 128
	CLCN=CLCN+TLJN	INDE 125
300	SUNITACO	180F 130
	ZEEGIN=ZENE	INDF 121
	SUBLAT = SUBLAT+ TLAT	. INDE 132
. 350	CONTINUE	INDS 183
	BEGLN=9EGLN+FLON	INDC 134
400	CONTINUE	INDE 125
•	BEGLAT=FUGLAT+RLAT	INDE 126
450	CONTINUE	INDE 137
	CONTINUE	T- INDE 138
	RE TURN	1NDC 139
	END	OAL BONI



INOUPT

DESCRIPTION

INOUPT is a subroutine specifically designed as a part of the Multi-Arc GEODYN program.

INOUPT performs four basic tasks for GEODYN.

The tasks that are performed by INOUPT are the following:

- 1) INOUPT reads the GEODYN Input Cards which define parameters common to all arcs.
- 2) INOUPT prints the GEODYN run heading.
- 3) INOUPT reads the GEODYN INput Cards which define parameters for a single arc.
 - 4) INOUPT prints a heading for each arc.

INOUPT performs tasks 1 & 2 on the first entry and performs tasks 3 & 4 on all subsequent entries.

NAME	INDUPT				
PURPOSE **	2) TO PRI	D OFTIONAL NT HUN CESC L SUBACUTIN		DATA TAPES	
CALLING SEQUENCE	CALL INDU	FT (NARCS + AR	CNGT		
SYMBOL TYPE	DESCRIPTI	CN	•	•	
NARCS I	INPUT - T	HE NUMBER C	F-AFCS IN T	HE RUN	•
ARCNO I	INPUT - T	HE ARC NUME	BER	•	
SUBROUTINES USED	TDIF	YA GN Y	DENDEM	PRNTPR	CLTAR
	NUMBP2	CCEFL	D COS RD	DULaso	ELFM
	PDE N1	GEOSRE	DAVERT	DATES	PCFoD
	ERROR	SANIHA	SIMED		
COMMON BLOCKS	ALEMRO	APAFAM	CELEM	CEPHEM	CGEDS
	CCNOUT	CONSTS	CCPBI	MA AA 90	CTIME
	FLXBLK	FMODEL	INITEK	INTELK	PREBLK
	PRICRI	SIGRLK	SEFELK	TPEBLK	TAMV
	ABBLOK				•
INPUT FILES	INTP - IN	PUT CAPDS			•
DUTPUT FILES	CLIP - PR	INTER			
SCRATCH FILES	SCRC - 16	.•			•

SUBROUTINE INDUPT(/NARCS/./ARCNO/)	UCNI	35
IMPLICIT REAL (8-H,C-Z)	INDU	36
LOGICAL GADESWIKEPLERITESETT .VARSTP. OFBTSWIXY ZESWIXYZLSWITDREEC.	U CM 🖫	37
. PLTESWINDRENTINITAL INFINCELISUES AT ICMPGPRI PART GRIPPMATIS IMDATI	INDU	0.8
■ PCESIN HEVESWALITRESASTARTRASTARTWAHYPERASEQUEN	UGAI	39
LOGICAL *1 VHCCHN.PFEPFO.PLHSW.NAMEB.NAMET	INDU	40
INTEGER *2 I PREPR: INCPRE: CULL: ISTNO: IMTYPE: DEAGNO: EMISNO:	UCNI	41
BTYPE.DSTANC.ESTAND.ISTAND.ISTANE.MTYPT.NNFAS.PE.TYP.CHANEL.	I NO U	4 =
• INDIXCS+NP+NL+00 STNC+88TYPE	UCNI	47
INTEGER OUTFIERTELOUSUPFIXYZTPIZECHU, ADDRISEADIESTSTA, GEUTPIRECHO,	INDU	44
EATP FLTP, SOFA : PLOTP : SOFC : ALDED : PLONDI : OFDUR : PMATNO : STARTA :	UCNI	45
STAR 10 • OLTSTR • PARMAX	UCMI	46
FEAL RAD FREEC GERSIG FRATOT SIGCEGS ASH AITIME PLHSIG.	UCNI	47
• SIGSTU .VARCOV. 31 5 .PI .RATE .TEIF. RIAST . 2DITN. TWOPI. RIASSG.	טפאז	48
• CUNVRG + FIND X + SG FRNT + CUTCCN + SD + SD + DP + EL + ES C	UCNI	49
DUBLE PRECISION MODEL, NAME, UNAME, ITHMS, MEORY, MSAT, LOVY	INDU	50
FIM: ::SICN C(!AM: (32) -PUHSW(1) - PUHSIG(6-1) - INCXCS(960-3).	INDU	£1
1 SUPF(4050) *GPSIG(960) *FOBILS(6) * CNINT(3,2)*TIF(S(7)*	INDU	52
• GPV4LU(96.) •A(6.6) •NAM 00(8) •ETSTNO(575) • FLTYPF (675), ET15(5).	UENT	53
. KTAPI'S(4)	INDU	£4
COMMONZALPMICZITAMS(5), TIMING, BLANK, ATYPE(31), UNITS(15), FLOUT.	UCNI	55
		- *-

```
HYPER
                                                                              INDU
                                                                                     56
COMMONIZARARININARA 1 NAAFI 4 NELAS 465 TST A 4 NS AT 4 NGPARC 4 RECND 14
                                                                                     57
                                                                              U CM I
   NPAR AM INDI A SE I PAR MAX
                                                                              UCNI
                                                                                     58
COMMONICE LE MISLEMST(6.2).OPBCLA(6.2).XNU.1C.FMSTCT
                                                                              UCMI
                                                                                     50
COMMONACE 14 (185) ONA TELL (185) + LETARC (1861) + (187) ON AND (1861) + (1862)
                                                                              U CA I
                                                                                     60
COMMUNICGUOEXISATIO(2), IPPEPR(4,50), ARTHOX(2,50), INCORD(2,50),
                                                                              INDU
                                                                                     61
   MEPF FR .NSIG .NCULL .SIGCHG(SC) .IMTYPE(SC) , ISTNG(SA) . CULL (2.100)
                                                                              UCMI
                                                                                     €2
CCMMONZCONDUTZIG1 + CUTCON+MINCUT+MIX OUT+LITTES + MAXSAT(7)+NSTAPD+
                                                                              UCHI
                                                                                     €3
   STAR TE .STARTW.STARTA.STARTC.INSTRT.OUTSTR
                                                                                     €4
                                                                              U CM I
COYMON/CONSTS/DPI +DTWCPI +CFAD+DFSLC
                                                                              UGMI
                                                                                     €5
COMMON/COSET/FATOCT(2).P190CT(2).P1RHT(2).APHT(2).P6:(2)
                                                                              THOU
                                                                                     66
COMMONYCPARAMINETA INMASTINSTEST INCININGLAS INGPCIINGPC2.
                                                                                     67
                                                                              INDU
   NGPC CM -NCSLST + CMPGPP + LIM1 + LIM2 + NEUN + NEUNST + NT IEST + NT IEEN +
                                                                              TNOU
                                                                                     68
   INNE SWINCONSTINDCONS
                                                                              UCHI
                                                                                     69
COMMON/CTIME/CATAFP.DAYFEF.DSTART.CAYSTP.DAYINT.DORBIT.DAYEND.
                                                                              LINDU
                                                                                     70
   DRATE DORBI DORBIE DEFRET TYBEG
                                                                                     71
                                                                              UCHI
COMMONNEL XELK MESTRY (900) . BSLAD (900) . BTY PE (900)
                                                                                     72
                                                                              U CA I
COMMONVE MODIFIEST HOEXI + NO EX2'+I NO EX3+ NO EX4+ CS (30+33) + MODEL(8)
                                                                              UCHİ
                                                                                     73
COMMONZINITEKZIL PYMC +IZPHM+TPST C+IYFSF+INNMAX+INNMIN+CONVRG+
                                                                              UCNI
                                                                                     74
   OFBEIL(6.2) . CDITN. INSUPE , I OSAT (2) . ORBTSW. XY ZESW. XY ZLSW. PL TLSW.
                                                                              U CM I
                                                                                     75
   GROF SWIKEPLER & SUBSAT & PART GP & PEMAT & EMAT NO & IMCAT & PCES IM.
                                                                              UCHI
                                                                                     76
   MISLOG(2)
                                                                              UCHI
                                                                                     77
COMMON/INTPLK/THOCT1.THOCT2.THGT2S.GM.XC.AESC.FLAT.
                                                                                     78
                                                                              UCHI
   F S032 + FF S032 + G M3 (6) + B(2) + BC OT (2) + BC (2) + AP CM(2) + AP EM (2) + RPPESS - INQU
                                                                                     75
   INITAL INCERATITHETGO IMACOY(6) ISTEPSZ(2.2) INLVERA(2), CPLEER(2).
                                                                                     23
   CTOL(2) #FTOL(2) #STFLCW(2) #STEFUP(2) # CFDER(2,2) # ASAT(2) #
                                                                              UCHI
                                                                                     21
   MSAT(2), V4FSTP(2) +HLVDSW(2), NGCN(2), ACCF (2), ACCF (2), SFAD(2),
                                                                              U CM I
                                                                                     80
   LOW (3) + TOFEF T + NO CDY
                                                                              INDU
                                                                                     82
COMMON/FREELK/DAYSTA, CRS1, CBS2, SIG1, SIG2, SFENCX, ISTA,
                                                                              U CN I
                                                                                     24
       MITYPE INMEASIPRETYP(2) ICHANELIVHECHN, PAZPRO, RUCHO
                                                                              INDU
                                                                                     F 5
COMMON/PRIDEL & LEMIN(6.2) . VARCEV(6.6.2).TITLE(30). DRAGSG(2).
                                                                              INDU
                                                                                     86
   ERGD $6(2).EMISSG(2).DRAGO(2).DRGDD (2).EMISSO(2).CD(2).
                                                                              INDU
                                                                                     97
   CDD(2) if MISS(2)
                                                                              INDU
                                                                                     20
COMMON/SIGBLEK/SIGSTD (30), SGPENT (30), 14FRAY (4)
                                                                              TNOU
                                                                                     EG
COMMON/ SRFBLK/PHI (675) .XLAM (675) .CP (675) .CL (675) .SD (675).
                                                                              INDU
                                                                                     SO
    $$)((75),NP(675),NL(675),NSD
                                                                              INDU
                                                                                     91
COMMONATINGS EKALINTP, CUTP, GATP, XY 2TP, KC FT AP, RVTP, FLOTP, IDBS, S CRA,
                                                                              INDU
                                                                                     92
   SCRC .FLTP .GRD IP
                                                                              UCNI
                                                                                     C 3
COMMON/VMAT/PREFLAT(6.6) .SUM1 (27)
                                                                              UGNI
                                                                                     CΔ
COMMONY VEBLEK/BIASO (900) + BIASSG (900) + EST ANO (900)
                                                                              UCMI
                                                                                     95
EQUI VALENCE (RSEC + DRSEC) + (USTANC + FANGET (1)) +
                                                                              UCNI
                                                                                     95
   (IND XC S(1.1) .BSTRT(:)) . (GPSIG(1) . BIASO(1)) . (PLHSIG(1.1).
                                                                                     97
                                                                              UCMI
   6 STF 1(721)) + (PLH SW(1) + BTY FJ (25J))
                                                                              THOU
                                                                                     58
EOLI VALENCE (ISURF(1), PHI(1)), (CAFDID, NAME8(1)), (NAME7, NAME8(7))
                                                                              UCMI
                                                                                     50
EQUI VAL @NCE ( (BE STRO(1) + NP(1)) + (PETY FY(1) + NL(1)) + (CT1+5T15(1)) +
                                                                              UCMI
                                                                                    100
   { T2+DT15{2}} +( T3+DT15{3}) + (T4+,CT15{4}) + (T5+DT15{5})
                                                                              INDU
                                                                                    101
DATA NO AFOS /32 / JOA SH / 1 H-/
                                                                              INDU
                                                                                    103
DATA CONAM ZEHOFBIT .6HEARTH .6HSAT
                                            PARCHO . CETCORES . COST THE.
                                                                             * INDU .103
    CAICHA . JORCUTPUT . 6HSIGMA . . 6 HSTEP . . . CHSTACST . 6 HCORPEL. 6HBIAS
                                                                             . INDU 1CA
   OH VARCOV JOHED IT
                      . . CHALSID . CHEKE PROJECTED . CHOULD
                                                                  • CHFLUX
                                                                            LINDU
                                                                                   105
   EH STAFUS AUHENCODE FAGHLATA
                                  +6 HEMATEX + 5 HS INC AT + 6 HT DLS
                                                                  . 6HRST/FT. INOU 106
                                  +6 HEETAS +6 HST GO AT Z
   CHSURF
             *6HLLCUT *6HCCFF
                                                                              INOU 107
DATA MONINTZHE QUATION, BHS OF MOT, BHICH, BEVARIATIO, RENAL BOUA,
                                                                              TROU 109
   SHITTONSZ
                                                                              THOU LOS
DATA BODITSVAH LUNARIGH SCLARISH V. NUSITHMARTIAN, THOUPITER.
                                                                              INOU 110
                                                                              TROU 111
```

```
DATA TIDE SZEHLUNAR (SH. AND. (SHSOLAR) SH. EFFE (SHCTS. I. SHNCLUD) 2HED/
                                                                                INDU 112
      DATA HERTZYERHERTZY . SCOUCNY . FALSE . / . KT APESY4 # C/
                                                                                INDU-113
      A171ME(C STAFT) = TOIF (4 +3 +DGTAFT) /8 +6454
                                                                                INDU 114
                                                                              1 1NOU 115
      DO 50/1=1.30
   50 SGPF NT(1) = S15 STD(1)
                                                                                INDU 116
      II. LM=MTYPF
                                                                                INDU 117
      IF (AHONC+NE+C) GO TO 100
                                                                                INDU 118
C. INITIALIZE FOR COMMON OPTIONS
                                                                                INDU 119
      LARC =NA FC S
                                                                                INDU 120
      ETARTRE . FALSE .
                                                                                INDU 121
      STAR THE . FALSE .
                                                                                1NOU 122
      STAR TA=1
                                                                                INGU 123
      STAR TO=1
                                                                                1NDU 124
      ND XDEG= (
                                                                                INDU 125
      ND おびた コ= C
                                                                                INDU 126
      IN SUPR = 3
                                                                                INOU 127
      NSTARD= (
                                                                                INDU 128
      NSD = C
                                                                                INDU 129
      NO CONS= C
                                                                                1NOU 120
      CAUL CLEAR( UNAME .1336 .11
                                                                                INDU 131
      CALL CLEAR(ESTRI,4050,1)
                                                                                INDU 132
      ·CALL CLEAF(BIASO 2250 11)
                                                                                INDU 133
      NSTSST=C
                                                                                INOU 134
      RMSTOT=1000.
                                                                                INDU 135
      NA MOFLE . FALSE .
                                                                                351 UCM
                                                                                1N3U 137
      GO TO 200
C INITIALIZE FOR ARC OPTIONS
                                                                                INOU 138
 100 16265#MARCS
                                                                                1NŬU 139
      IP (ARCNU. EQ. LARC) SEQUEN=. FALSE.
                                                                                INDU 140
      ELCUT=C.COC
                                                                                INDU 141
      NU XU! GENT XC MI
                                                                                INDU 142
      IEATID(1)=0
                                                                                INDU 143
      D=(S)CITABI
                                                                                INDU 144
      NE XOND = NE XC NE
                                                                                INDU 145
      NGPARCECGC
                                                                                INOU 146
      RECNUT=RECNU
                                                                                INDU 147
C SUT DRAG & INTEGRATION DEFAULTS
                                                                                INDU 148
      DO 150 1=1.NSAT
                                                                                INDU 149
      IF (PERH T(I) +GT+8+002) GC TO 120
                                                                                INCU 150
      IF (OABELA(2 ill.GT.1.CDC.AND.COTFFE(ELEMST(1.1).ELEMST(1.1))
                                                                                121 UCMI
          •GT. 51.5259D+12) GC TO 120
                                                                                INDU 152
      CD(1)=2.300
                                                                                1NOU 153
      0.75 #S=(1)00AAQ
                                                                                INOU 154
      DR AG SG( I ) = 0 + 50 0
                                                                                INDU 155
  120 IF (URBILA(2:1).LT.1:00-2.AND.PERFT(1).GT.1.5DE) STEPSZ(I:1)=
                                                                                INDU 156
         PESHT(1) #3.8495570-3+86.72566EC
                                                                                INDU 157
      INDU 158
      EPGDu(I)=0.000
                                                                                INCU 159
      DF G0 95( 11 = 0 .00 0
                                                                                DOI UCNI
      VARSTR(I) = CRBELA(2:1):GT.2:200
                                                                                THOU 161
      IF(VARSIP(I)) STEPSZ(I+1) #25.060
                                                                                1931 UCMI
      IF (LEAG C(1) .GT. G. CO G. AND. . NOT. VARSTP(1)) STERSZ(1.1)=75.000
                                                                                IMDU 163
      1F (STEF SZ(I +1) +GT+4+CC2) STF FS Z(I+1)=4+002
                                                                                INDU 164
  130 STLPS7(1:2)=STCPS7(1:1)
                                                                                INDU 165
C REAL OPTION CASE
                                                                                INDU 166
  200 FC AC (INTP +1 CCC4 +2ND=9CC) CAPDID +14 PRAY + DT1+T2+T3+T4+T5
                                                                                INDU 167
```

C. DETERMING INPECTE CARD SEAD INDUI 16C IDUI 203 I=1, KART S INDUI 16C IF (CARD IDUA CO.C)AAR(1)) GO TO(4CC.415.41C.415.42C.425.43C.435.435.4 INDUI 17C 4.461.445.445(.4590.455.446C.475.685.4685.990.475.495.20C.1250.50C.255.50C.255.40C.135.485.4990.475.495.20C.1250.50C.255.50C.1250.5			-	
IF (CARD IRAP OLC) ARC (1)) GD TC((ACD-ARC), AIC, A15, A2C, A2C, A3C, A3C, A3C, A3C, A3C, A4C, A4C, A4C, A4C, A4C, A4C, A4C, A4	C	DETERMING TYPE OF CARD READ	UCHI	331
. 4601 465,459,455,465,467,1693,485,495,475,495,700,500,500,500,170 . 300 CONTINUE C ILLLIAR BOTTON CARD — PRINT AFROM MESSAGY AND STOP CALL BREGE(3:CAFPID) C MATRIX CARD 300 9MATNOCDTI+C.500 1N00 175 60 TO 2:CO C MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 311 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 311 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 311 SIMAATA.TUU. FOR MATRIX CARD 310		DD 250 I=1.NCARUS	UCHI	169
. 4601 465,459,455,465,467,1693,485,495,475,495,700,500,500,500,170 . 300 CONTINUE C ILLLIAR BOTTON CARD — PRINT AFROM MESSAGY AND STOP CALL BREGE(3:CAFPID) C MATRIX CARD 300 9MATNOCDTI+C.500 1N00 175 60 TO 2:CO C MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 311 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 311 SIMAATA.TUU. FOR MATRIX CARD 310 SIMAATA.TUU. FOR MATRIX CARD 311 SIMAATA.TUU. FOR MATRIX CARD 310		IF(CARDID = FG.CONAMI(I)) GD TC(400.405.416.415.420.425.436.435.	INDU	170°
300 1316 1320 1320 1350 1350 1350 1350 1370 1370 172 2 SEC CONTINUE C LILISAL SPITION CASE - PRINT GERGE MESSAGE AND STOP CALL SERBER(SCAPPID) C BMATEX CASD 100 176 300 SMARNDEDHI+C. 300 100 176 GO TO 2CO 100 176 GO TO 2CO 100 176 310 SINCATE TUE. FOR STATE CASD 310 C SINCATE TUE. FOR STATE CASD 320 C SINCATE TUE. FOR STATE CASD 320 C SINCATE TUE. FOR STATE CASD 320 C TO 2CO 100 160 C TO 2CO 100 160 C TO 2CO 100 160 C TO 2CO 100 160 C TO 2CO 100 160 C TO 2CO 100 160 100 160 C TO 2CO 100 160 100			INDU	171
250 CONTINUE		· · · · · · · · · · · · · · · · · · ·	•	
C ILLIANL SPTION CAPE - PRINT GEROR MESSAGE AND STOP CALL BRENE(S.CAFDID) C MANTEX CAPD 303 SMATNEDDDITE G.SD0 PDMATET2.GT.C.OD0 INDU 176 305 SMATNEDDDITE G.SD0 INDU 177 BMATET2.GT.C.OD0 INDU 177 BMATET2.GT.C.OD0 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 178 INDU 180 IN				
CALL SERGE (2-CAPSID) C BMATRY CARD 30. 9 MATHORNITH C-BDC 100 175 30. 9 MATHORNITH C-BDC 100 175 C SIMCAT CARD 310 SIMCAT CARD 32C JELERAR (1). 60.0 3				
C MARTEX CARD 1900 177 300 MATHOENDITECTOR 1900 177 300 MATHOENDITECTOR 1900 177 95MATETT2.GT.C.SEC 1900 177 1900 177 1900 177 1900 177 1900 177 1900 177 1900 178 1900 177 1900 177 1900 178 1900	•	•		-
300 9 NATING DTT C. 5DC	Ċ		-	
### PBW T = T. C. C. C. C. C. C. C. C. C. C. C. C. C.	•		•	
GO TO 2CO SIMPAT CAPD 316 SIMPAT APTUS. PESSIMPLAFF AY(1).00.0 GO TO 2CO TINDU 180 GO TO 2CO TINDU 182 GO TO 2CO TINDU 182 C TOLS CARD TINDU 183 REJAFRA Y(3) 816-LAFRAY(4) LETJA 9.500 INDU 186 LETJA 9.500 INDU 186 LETJA 9.500 INDU 186 IF (AACHC.00.0 NDCDNSHL IF (K.GTLC) NLXAEMING(30,MAXG(3.K)) INDU 189 IF (J.EG.C) GO TO 225 INDU 191 IF (J.EG.C) GO TO 225 INDU 191 IF (T2.GT.C) GO TO 225 INDU 191 IF (T2.GT.C) GO TO 225 INDU 191 IF (T2.GT.C.C) FTOL(J) DOT1 INDU 192 GO TO 2CO INDU 193 GO TO 2CO INDU 195 GO TO 2CO INDU 196 GO TO 2CO INDU 197 GO TO 2CO INDU 198 GO TO 2CO INDU 199 GO TO 2CO INSTATE I FRAY(1)*10+LAFRAY(2) INDU 2CO STARTABACK (1)*10+LAFRAY(4) INDU 2CO STARTABETH C.SEC STARTABETH C.SEC STARTABETH C.SEC STARTABETH C.SEC STARTABETH C.SEC STARTABEN X (STARTA) INDU 2CO STARTABEN X (STARTAC) INDU 2CO STARTABEN X (STARTA				
C SMFAT CAPD 310 SINCATE TUE. 310 SINCATE TUE. PCESSME JAFFAY(1).00.0 GO TO 200 INDU 102 GO TO 200 INDU 103 320 JEJAFRAY (1) INDU 105 REJARRAY (1) INDU 106 321 JEJAFRAY (1) INDU 107 REJARRAY (2) 310 LAJAFRAY (4) INDU 108 LE 134-0, CO INDCONSEL IF (K.GTLC.) NCLXAEMING (30, MAXG (3, K)) INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 IF (J.GTLC.) GO TO 325 INDU 109 GO TO 320 JEJL2 INDU 109 GO TO 320 JEJL2 INDU 109 GO TO 200 INDU 109 GO TO 200 GO TO 200 INSTATA CACC 340 IF (APCACLANC.C) GC TO 200 INSTATA LEFT I FLAY (1)*IO+LAFRAY (2) OLTSTER LASCAY (3)*IO+LAFRAY (4) INDU 202 STARTA ECTI+C. SDO STARTA ECTI+C. SDO STARTA ECTI+C. SDO STARTA ECTI+C. SDO STARTA ECTI+C. SDO STARTA ECTI+C. SDO STARTA ECTI+C. SDO STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 209 STARTA ECTI+C. SDO STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 209 STARTA ECTI+C. SDO STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 209 STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 209 STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 209 STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 209 STARTA ENDERLY (1)*IO+LAFRAY (4) INDU 210 C SURLAN CART INDU 211 SCONSCI POLLO (1)*IO 200 NO 10 200 INDU 212 ALAM (NST.) ETA HE ACK (INDU 11) INDU 212 ALAM (NST.) ETA HE ACK (INDU 11) INDU 212 ALAM (NST.) ETA HE ACK (INDU 11) INDU 212 INDU 212			•	-
316 SIMATH TRUE,	_	•		
PCESIM=IAFFAY(1).00.0	-		=	
GO TO 200 C TOLS CARD TROUGHT STAFFAR (1) C TOLS CARD TREATHER (1) (1) (10+1AFFAY(4) KETAFFAR (1) (10+1AFFAY(4) LETJY-1, ET CO IF (ARCITEL MOLL) NDONSEL IF (ARCITEL MOLL) NDONSEL IF (LACOLO) GO TO 225 INDU 169 IF (JACOLO) GO TO 225 INDU 169 INDU 169 INDU 169 INDU 169 GO TO 200 C RSTAFT CASC JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO C RSTAFT CASC JACOLO JACOLO JACOLO C STAFT CASC JACOLO JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO STAFT CASC JACOLO JACOLO STAFT CASC JACOLO JACOL			•	
C TOLS CASO 22C J=IAFRAY(1) K=IAFRAY(3)*I C+IAFRAY(4) K=IAFRAY(3)*I C+IAFRAY(4) L=IJ+J, ECO IF(ARCHE MO.(.) NDCONS=L IF(KAGT.C.) NLX4=MING(30,MAXU(3,K)) IF(JACO.C.) CO TO 22S INDU 197 IF(JACT.C.) GO TO 22S INDU 197 IF(CII,GT.C.) CDC) FTCL(J)=DTI IF(CII,GT.C.) CDC) FTCL(J)=DTI IF(T1,GT.C.) CDC) CTOL(J)=T2 GO.TO 2CO INDU 195 IF(T1,GT.C.) CDC) CTOL(J)=T2 INDU 195 IF(T1,GT.C.) CDC) CTOL(J)=T2 INDU 195 IF(T2,GT.C.) CDC) CTOL(J)=T2 INDU 195 GO TO 2CO INDU 196 GO TO 2CO INDU 197 GO TO 2CO INSTATE IAFRAY(1)*IO+IAFRAY(2) INDU 2CO INSTATE IAFRAY(1)*IO+IAFRAY(2) INDU 2CC STAR TA=CUT+C,SDC STAR TA=CUT+C,SDC STAR TA=CUT+C,SDC STAR TA=CUT+C,SDC STAR TA=CUT+C,SDC STAR TA=NAXC(1,STARTA) INDU 2CC STAR TA=NAXC(1,STARTA) INDU 2CC STAR TO=INSTATC,OT STAR TO=INSTATC,OT STAR TO=INSTATC,OT STAR TO=INSTATC,OT STAR TO=INSTATC,OT STAR TO=INSTATC,OT NOU 21C NOU 21C NOU 21C NOU 21C NOU 21C NOU 21C NOU 21C NOU 21C NOU 21C NOU 21C NO			-	
32C J=IAFRA(1)	_			
R=IAFRAY(3)*10f-IAFRAY(4)	Ľ			
L=T3+0.000 IF(ASCHC.MO.C) NDCONSEL IF(ASCHC.MO.C) NDCONSEL IF(ASCHC.MO.C) NDCONSEL IF(ASCHC.MO.C) NDCONSEL IF(ASCHC.MO.C) NDCONSEL IF(IX.GT.C) NCi x4=MING(30.MAXO(3.K)) IF(J=C0.C) NC TO J=S IF(J=C0.C) NC TO J=S IF(J=C0.C) NC TO J=S IF(J=C0.C) NCO NCIC(J)=DT1 INDU 152 IF(T2.GT.C.C.C) CTDL(J)=T2 INDU 153 IMAGE IM				
IF(ARCHCLEO.L) NDCONSEL			· -	
IF(K,GT,C) NEX4=MING(30,MAXU(3,K))		·	UCMI	167
IF (J.EQ.C) GO TO 225			ט פא ז	188
IF(J.6T.2) GD TC 325	• •		UCNI	169
IF (DT1.GT.C.CDC) FTCL(J) = DT1			UCNI	150
IF (TR-GT-C, CC G) CTOL(J) = TZ		· · · · · · · · · · · · · · · · · · ·	INDU	191
GOLTO-SCO 325 DC 325 J=1.2 IF (DTI, GT.C.ODG) FTCL(J)=DTI IF (DTI, GT.C.ODG) FTCL(J)=T2 IF (DTI, GT.C.ODG) FTCL(J)=T2 INDU 155 IF (TX.GT.C.CDG) CTCL(J)=T2 INDU 196 GO TO 2CO INDU 199 C RSTART CARC 3-0 IF (APDR.C.NT.C) GC TO 200 INSTR.TIAFRAY(1)*10+1ARRAY(2) INDU 201 IN STR.TIAFRAY(1)*10+1ARRAY(4) INDU 202 CUISTRE IASPAY(5)*10+1ARRAY(4) INDU 203 STAR TA=DTI+C.SDO STAR TA=DTI+C.SDO STAR TA=DTI+C.SDO STARTO=MAXC(1.STARTA) INDU 205 STARTO=MAXC(1.STARTA) INDU 206 STARTO=MAXC(STARTC.1) INDU 207 STARTO=1 STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON STARTON		IF(D11.GT.C.3DC) FTCL(J)=DT1	UCHI	192
325 DC 326 J=1.2	-	IF(T2.G1.C.CC0) CTOL(J) = T2	UCNI	153
IF (DT1, GT.C.ODC) FTCL(J) = DT1		•	TNOU	194
IP(T2.GT.C.CDC) CTCL(J) = T2		325 DC 325 J=1.2	INDU	155
326 CONTINUE		IF(DT;.GT.C.00C)	U CNI	196
GD TO 2CO C RSTART CARC 340 IF (APCN.C.NT.C) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 IF (DPCN.C.NT.C.) GC TO 200 C START = INSTR.C. G. G. G. G. G. G. G. G. G. G. G. G. G.		IF(T2.GT.C.C) CTCL(J) =T2	UCMI	157
C RSTERT CARC 340 IF (APCNE,NT+C) GC TO 200 INSTRIBLE HAY(1)*10+1ARRAY(2) INSTRIBLE HAY(1)*10+1ARRAY(2) INDU 202 OUTSTRIBLE AY(3)*10+1ARRAY(4) ETART TABLE TT+C+5DO ETART TABLE TC+C+5DO ETART TABLE XC(1+STARTA) C START TABLE XC(5TARTA) INDU 205 ETART TO=1 ETA		"326 CONTINUE	U GN I	198
340 IF (APCNC.NT.C) GC TO 200 IN STR T=16 AY(1) *10+1AFRAY(2) UNDU 202 OU 1STR=1ASYAY(3) *10+1AFRAY(4) INDU 203 STACT=16 AY(1) *10+1AFRAY(4) INDU 205 STACT TO=174C.5DC STACT TO=174C.5DC STACT TO=174C.5DC STACT TO=NAXC(STACTC.1) INDU 207 STACT TO=1 INSTRT.GT.0 STACT TO=1 INSTRT.GT.0 STACT TO=1 INSTRT.GT.0 STACT TO=10 AXC(STACTC.1) STACT TO=1 INSTRT.GT.0 STACT TO=10 AXC(STACTC.1) STACT TO=1 INSTRT.GT.0 STACT TO=10 AXC(STACTC.1) STACT TO=1 INSTRT.GT.0 STACT TO=10 AXC(STACTC.1) STACT TO=10 AXC(STACTC.1) INDU 207 STACT TO=10 AXC(STACTC.1) INDU 210 STACT TO=10 AXC(STACTC.1) INDU 211 STACT TO=10 AXC(STACTC.1) INDU 212 INDU 213 INDU 214 STACT TO=10 AXC(STACTC.1) INDU 215 INDU 216 INDU 216 INDU 217 INDU 216 INDU 217 INDU 218 INDU 219 INDU 220 INDU 221 INDU 221 INDU 222 INDU 222			LHOU	199
IN STR T=1A FHAY(1) *10+1AFFAY(2) OUTSTR=1ASPAY(3) *10+1AFFAY(4) INOU 203 STAR TA=DT1+C.5D0 INOU 204 STAR TA=DT1+C.5D0 STAR TO=T2+C.5D0 STAR TO=T2+C.5D0 STAR TA=MAXC(1.5TARTA) INOU 205 STAR TO=MAXC(STARTC.1) STAR TO=1 INOU 208 STAR TO=1 INOU 209 STAR TO=1 STAR TO=1 STAR TO=1 STAR TO=1 INOU 209 STAR TO=1 STAR TO=1 INOU 210 STAR TO=1 STAR TO=1 INOU 210 STAR TO=1 STAR TO=1 INOU 210 STAR TO=1 INOU 210 STAR TO=1 INOU 210 STAR TO=1 INOU 210 INOU 211 INOU 212 INOU 212 INOU 213 INOU 214 SC(NSL) =D T1 INOU 215 SSD(NSC) =DABS(T2) INOU 216 INOU 217 INOU 217 INOU 218 INOU 219 INOU 219 INOU 210 INOU 220	C	RST/RT CARC	UČNI	200
DUTSTR=TASPAY(3)*10+1AFRAY(4)		340"IF(APCNC.NT.C) GC TO 200	THOU	201
DUTSTR=TASGAY(3)*10+1AFGAY(4)		IN STR T= IA #FAY(1) #10+ I AFFAY(2)	UCNI	252
STARTARCHI+C.5DO		OUTSTR=1ASPAY(3)*10+1AFRAY(4)	- •	
STAF TO = T14C.SEC		STAR TA = 0 T1 + C. 50 0		
STARTA=MXC(1,STARTA)		12+C-500	=	
C STARTO=NAXC(STARTC+1) STARTO=1 INDU 208 STARTO=1 STARTO=NATC-O STARTO=NATC-O STARTO=NATC-O STARTO=NATC-O STARTO=NATC-O STARTO-NATC-O STARTO-		STARTA=MAXC(1,STARTA)		_
STAR TO=1	C	\$ TAR TO = WA XC (\$ TAR TC . 1)	-	
STANTP=INSTRT.GT.0		STAR TO=1		-
### ##################################		STAR TP=INSTRT.GT.0		
GO TO 200 C SURIEN CARC 359 IF (ARCINC.NI1) GO TO 200 NSD=NSD+1 SC (NSL)=DT1 SSC(NSD)=DABS(T2) PHI(NSC)=T3 NAM(NSC)=T4 FF AD(INTP-1(CO4-TND=92)) CARDIC.IMFRAY.DTI.T2.T3.T4.T5 INDU 210 IF (CAFCIO.NF.FLANK) CALL GRRDP(14.CONAM*(2A)) NP(NSD)=MAXC(IAFRAY(1)*10+1AFRAY(2).1) NL(NS.)=MAXC(IAFRAY(1)*10+1AFRAY(4).1) NL(NS.)=MAXC(IAFRAY(3)*10+1AFRAY(4).1) NL(NS.)=MAXC(IAFRAY(3)*10+1AFRAY(4).1) NDU 222		·		
C. SURTEN CARD 350 IF (ARINC.NI.0) GO TO 200 NSC=NSC+1 SC (NSC) = CT1 SC (NSC) = CT1 PHI(NSC) = I3 NAM(NSC) = T4 FF AC(INTP-1(COC4-INC=90)) CARDIE - IMPRAY - CTI-T2-T3-T4-T5 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 210 INDU 220 INDU 220 INDU 220 INDU 220		GO TO 2 CO		
350 IF(ARINC.NI.0) GO TO 200 NSC=NSD+1 SC(NSC)=CTI SSC(NSC)=CTI PHI(NSC)=I3 NLAM(NSC)=T4 FP AD(INTP-1(DC4-IND=9D)) CARDIE-IMMEAY-DTI-T2-T3-T4-T5 INDU 210 IF (CAHDID-NF-FLANK) CALL GROUP (14-CONAM*(2A)) NP(NSC)=MAXC(IAFRAY(I)*(3+IAFRAY(C)-I) NL(NSC)=MAXC(IAFRAY(I)*(3+IAFRAY(C)-I) NL(NSC)=MAXC(IAFRAY(I)*(3+IAFRAY(C)-I) NL(NSC)=MAXC(IAFRAY(I)*(3+IAFRAY(C)-I) NL(NSC)=MAXC(IAFRAY(I)*(3+IAFRAY(C)-I) NL(NSC)=MAXC(IAFRAY(I)*(3+IAFRAY(C)-II) INDU 222	5	•		
NSC=NSD+1			_	
SC (NSC) = D T1 SSD(NSC) = DABS(T2) PHI(NSC) = T3 LAM(NSC) = T4 FF AD(INTP+1(DC4+TND=9D)) CARDIC+1AFFAY+DT1+T2+T3+T4+T5 INDU 210 IF (CAFDIG+NT+FLANK) CALL GREDP(14+CDNAM*(2A)) INDU 220 NP(NSD) = MAXC(1AFFAY(1)*10+1AFFAY+C)+1) NL(NSJ) = MAXC(1AFFAY(3)*10+1AFFAY+C)+1 NL(NSJ) = MAXC(1AFFAY(3)*10+1AFFAY+C)+1 NL(NSJ) = MAXC(1AFFAY+C)+1AFFAY+C)+1 INDU 222				
######################################				
PHI(NSC)=T3 INDU 217 ALAM(NSC)=T4 INDU 218 INDU 218 FF AD(INTP-10004-TND=900) CARDIE-INFRAY-DTI-T2-T3-T4-T5 INDU 210 IF (CAPCID-NT-FLANK) CALL GRRDP (14-CONAM-(24)) INDU 220 INDU 221 NL(NS)=MAXC(IAPAAY(3)+10+IAPAAY(4)+1) INDU 222				
NEW NEW				
01S UCNI				
IF (CAFCIO.NT.FLANK) CALL GRADF(14.CONAM*(24)) 15. UCNI 16. (2) YAHRAI+01* (1) YARRAIDAN 17. UCNI 18. UCNI 19. (2) YAHRAI+01* (1) YAHRAIDAN 19. UCNI		EL ACATA TO TANA CARACTER SACRAM DEL CONTROL DE CONTROL		
22 UCNI (1.(4) YARRAI + 01* (1.) YARRAI + 01* (1.) YARRAI 1 O1		· · · · · · · · · · · · · · · · · · ·		
ML(NS) = MAXC(IAFRAIT+01+ (E) YARRAIT+01+ (E)			_	
TE COMPLETE A CONTRACT OF THE				
1 COUNTY OF CARE THANKED FOW DEED				
		to the transfer of and markets for DIA	11/10/0	223

```
INDU 224
      DP (N 50) =0 11
                                                                                INOU 225
     - IF (T2.LE.G.GDC) CALL EFFOR(15.CAPCID)
                                                                                INDU 226
      DL(*150) = T2
                                                                                INDU 227
      J=NP(NSD) #NL(NSC)
                                                                                INOU 228
      L+ARCH=NBON
                                                                                INDU 229
      IF (SED(NEO) +GT+ 0+ 0) NEE NET = NDENST+J
                                                                                INDU 230
      GO TO 200
C ELCUT CAFD
                                                                                INOU 231
  360 SECUT≈C TI
                                                                                SES UCH!
      GO TO 200
                                                                                INDU 233
C BBIAS CAFD
                                                                                1NDU 234
  376 IF (ARCNO.CO.0) GO TO 200
                                                                                INDU 235
                                                                                INDU 236
      J=1ARRA Y(1) *1 000+ TARPAY (2) *100+ TAPRAY (3)*10+ TARRAY (4)
                                                                               INDU 237
      IF (J.LE.C) GD TC 200
      DO 375 I=1.5 '
                                                                                INDU 238
      K=DT15(1)+0.500
                                                                                INDU 239
      1F(K.LE.0) GO TO 375
                                                                                INDU 240
      IF (K.ST.14) GC TO 375
                                                                                1NOU 241
      IF (NBIASE.GE. 675) GO TO 200
                                                                                INDU 242
      NBIA SEENBIA SE+1
                                                                                1NDU 243
      BE STNO(NBIASE) = J
                                                                                IN3U 244
      BO TYPT( NAIA SU ) = K
                                                                                INOU 245
  375 CONTINUE
                                                                                INDU 246
      GO TO 200
                                                                                IN3U 247
C SPÓDAT CARD
                                                                                348 UCMI
  380 IF (ARCHO.EO.O) SEQUEN=.TRUE.
                                                                                INQU 249
      GD TO 200
                                                                                1NOU 250
CHAD TIERDID
                                                                                INDU 251
 400 OPBISA=. TRUE.
                                                                                1NDU 252
      DF AG SG( 1) = 0.000
                                                                                INOU 253
      DH AG SG(2) = 0.000
                                                                                INDU 254
      DR GT SG( 1 ) = 0.000
                                                                                INDU 255
      DR GD SG( 2) =0.00 0
                                                                                1NDU 256
       XYZF SWELTRUCL
                                                                                INDU 257
      RVTP=10#14FAAY(1)+1AFFAY(2)
                                                                                1NOU 258
      Beec = Episec
                                                                                1NDU 259
       IF (R VTP .GT. C) WPITE (FVTP) CSTAFT .ICPY MD. IEPHM. BSEC. (ELEMST( 1.1).
                                                                                INDU 260
          1=1.6)
                                                                                INDU 261
       IYST2 T=0 T1+ +500
                                                                                ·INDU 262
       IYEND=T3+.500
                                                                                E35 UCM1
       IHM=T2/100.00+1.0-4
                                                                                INDU 264
       $MC=T2-DFLOAT(IHM*100)
                                                                                INOU 265
      DORGIT= YMEAY(IYSTRT, IHM, SEC)
                                                                                INDU 266
      DORDITHSOPRITHALTIME (DORBIT)
                                                                                INDU 267
      DA JAMPEDMINI(CA TAUPADCEBIT)
                                                                                1NDU 268
       IHM=T4/136.00+1.0~4
                                                                                P3S UCMI
       STC=T4-DFLOAT(IHM*100)
                                                                                INDU. 276
      DAYS NO = YMOA YCIYEND (IHM (SEC)
                                                                                INDU 271
      DAYEND=DAYEND+AITIMG(DAYEND)
                                                                                INDU 272
       CANSTPECANE NO
                                                                                INOU 273
       GO TO 200
                                                                                INJU 274
                                           REPRODUCIBILITY OF THE
CIRAR THICARD
                                                                                INDU 275
                                           ORIGINAL PAGE IS POOR
  435 J=13 KIMFF / Y(1)+ 1 A ## AY(2)
                                                                                INDU 276
       IT (U.ST.C) INCEXI =U
                                                                                1NOU 277
       JEISHIARRAY(?)+IARRAY(4)
                                                                                INDU 278
       IF(U.GT.O) IN(EX3=U
                                                                                INJU 279
```

	•	INCE X1 = MA X0 (4 + I NOE X1)	•		1NOU 280
	•	INTEXS=MAXC(2.INDEX3)	•		INOU 281
		INDT X3=WINC(INDXX3+INDXX1)	•		INDU 282
		1F (AFÉNE NY +0) GETE 200			INDU 283
		IF (DT1.GT.0.000) GM=DT1			INDU 284
					-
		IF(Ta.GT.C.CCC) AE=T2			INOU 2.85
		IF(T2.GT.C.CDC) FLAT=T3			INDU 286
		NRMCFL=15.6T. C.DO	· .		INDU 287
		IF (T4.Ltc.ct.c) GG TO 200	•		EBS UCHI
		no 496 J=1.30	•	·	1NOU 289
		00 406 K=1733			INDU 290
	406	CS(J.K) = C. ODO			182 UGMI
		GD TU 200			INDU 292
C	SA T	CARD	•		1NDU 293
	410	J=IARRAY(1)			INDU 254
		IF (J.EQ.C) GO TO 412	ا م نسب معاد المستخدم المعادية المعادلة المعادلة المعادلة المعادلة المعادلة المعادلة المعادلة المعادلة المعادلة ا		INDU 295
		IF (J.GT.2) GO TO 412	,		INDU 256
		ASAT(J) =0 Tl	•		1NDU 297
		MEAT(J) =TZ			1HDU 298
		15ATID(J) =T3+C.500	•		1 NOU 259
		GD TO 200			1NOU 366
	412	20 413 J=1+NSAT			INDU 301
	***	ASAT(J) =0.11	•		1NOU 302
		MSAT(J) =T2	•		INOU 303
	A 1 7	15ATI5(J)=T3+C.500.		•	1NDU 304
	443	GO TO 200 -	•	•	1HDU 305
_	TID	ES CARD			
				•	INDU 306
	410	17 (FFCNC.NE.40) GO TO 200	•		TNOU 307
		LGVI(1)-D71	REPRODUCIBILITY OF THE		INDU 308
		LD VI(2) = T2	ORIGINAL PAGE IS POOR		INOU 309
		Lav. (3) = T3	· · · · · · · · · · · · · · · · · · ·		DIE UCHT
_		GO TO 200	·		INDU 311
C		LES CAFE			INOU 312
	420	J=TARRAY(1)			INDU 313
		K=IAFSAY(2)			1ŅDU 314
		IF (K.GT.C) NACDY=MINO(6.MAX3			IMQU 315.
		IF (J. 10.0.0.0R. J. GT. 6) GO TO 2	٠ <u>٠</u>	•	BIE UCHI
	,	170=(L)Y(O)6M			INOU 317
		G0 T0 2 C0			INDU 318
C	_	G CAFC			INDU 319
	425	J1=1		4	1NOU 320
		J2=NSAT			185 DCM1
	٠.	J=IAFFAY(1)			INDU 322
		IF (J.10.0.0.0P. J.GT.2) GC TO 4	26		1NOU 323
		11=1			1NDU 324
		J2=J	•		INDU 325
	426	DO 428 J=J1.J2	•		1NOU 326
		CD(J)=0 T1			INDU .327
		DFAGC(J)=DT1			BSE UCHI
		DPAGSS(J) =T2	•	•	INDU 329
		IF(5 T1.GT.C.GRO) GO TC 427	•		INDU 330
		T3=C+3C C			100 331
		14=0. A C	•		100 331 100 332
	427	C70(J)=17	•		
		08 GD 0(U) = 13	•		INDU 333
	428	58,60 \$5(3) =T4	•		1NOU 334
	~ ~ . ,	A CONTRACTOR			140U 335

```
INDU 336
        GO TO 200
                                                                                  1NDU 337
 C SULRAD CARD
                                                                                  INDU 338
   43C J1=1
                                                                                  INDU 339
        J2=HEAT
                                                                                  INDU 340
        J= I&FSAY(1).
                                                                                  INDU 341
        JF(J.∠0.C.DR.J.GT.2) GD TD 431
                                                                                 INOU 342
                                                                                  INDU 343
        J2≒J
                                                                                  INOU 344
   431 DO 432 J=J1.J2
                                                                                  INDU 345
        EMISS(J)=LTI
                                                                                  INDU 346
        EM1880(J)=0 11
   432 EMISSG( J) =T2
                                                                                  INDU 347
                                                                                  INDU 348
        00 TO 200
C DUTPLY CARE
                                                                                  INDU 349
   435 RATHEDTI
                                                                                  INDU 350
        IF (5 T1 * LE * C * D 0 ) G D T D 436
                                                                                  1MOU 351
        OR ATE = D T1 + D T1 + ( A1 T1 ME (D START + 7 + DO) - A1 T1 ME (DST ART ) )/7 + DO
                                                                                  INDU 352
                                                                                  INDU 353
        DRATE=ERATE /6.6404 .
   436 IF (IAREAY(!).CO.U.AND.IAREAY(2).EQ.Q) GO TO 437
                                                                                  INDU 354
        >YZFSW=1ARFAY(1).20.1.GR.1ARRAY(1).E0.3
                                                                                  INDU 355
                                                                                  INDU 356
        >YZLEW=1AFFAY(1).EC.2.CF.1AFFAY(1).EQ.3
                                                                                  1NDU 357
       "GFTF SWEIARRAY(2).GT.U
       PLILSW=IAFFAY(3).GT.C
                                                                                  INDU 358
        TORESTAILS TACABO
                                                                                  1NOU 359
        KLPLER=IAFRAY(1).GT.C.ANJ.IARRAY(4).GT.0
                                                                                  INDU 360
        J=13+ 50 €C €
                                                                                  INDU 361
      - WIF (J. YOU, S. OF. J. SOUS) KERTAF#J
                                                                                  INQU 362
       PARTGR4 14 . G T. C. 000
                                                                                  INUU 363
        60 TO 200
                                                                                  INOU 364
 C SIGNA CARD
                                                                                  INDU 365
   440 NSIG=NSIG+1
                                                                                  INDU 366
        ISTA = DT1+ . SE 3
                                                                                  INOU 367
        MT MPF=T2++500 1
                                                                                  83E UCMI
        ISTNO(NSIG) = ISTA
                                                                                  INIU 369
        IMTYPJ(NSIG)=MTYPJ
                                                                                  INOU 370
        ET=(DI2A)EHQD13
                                                                                  INDU 371.
        IF (13TA.G1.C) GC TO 250
                                                                                  INDU 272
        IF (MTYPU-LE .O) GC TO 442
                                                                                  1NOU 373
        SGPF NT(NTYPL) =T3
                                                                                  UCNI
                                                                                        374
        GD TO 200
                                                                                  UCNI
                                                                                        375
   442 DO 443 I=1.30
                                                                                  UCAI
                                                                                        376
   443 SGPKNT(1)=T3
                                                                                  UCHI
                                                                                        377
                                               REPRODUCIBILITY OF THE
        GO TO 200
                                                                                  U CM I
 C STEP CARD
                                               ORIGINAL PAGE IS POOR
                                                                                  U GN I
   445 JEIARRAY(1)
                                                                                  UCAL
                                                                                        380
        IDRD: S#IAFFAY(3) #10+1AFRAY(4)
                                                                                  IBE UCHT
        IF (Involerate and GO TO 448
                                                                                  UCHI
                                                                                        365
        TORD IN = MINC (15 + MAXO (5 +1 CRO ER))
                                                                                  INOU 383
   448 J1=1
                                                                                  ARE UCHI
        J2=4
                                                                                  1NDU 385
        15 (J.30.0.0F. J.GT.A) GO TO 446
                                                                                  SBE UCHT
        J1 = Ĵ
                                                                                  INDU 387
        J2=J
                                                                                  1NOU 388
   446 CO 447 J=J1 +J2
                                                                                  PAS UCH!
        IF(DT1.GT.A. (C) STEPSZ(J.,) = DT1
                                                                                  1NOU 390
        IF (IORDEP.GT.C) CROUP(U.L) = ICROER
                                                                                  INDU 391
```

		•	
IF(J.GT.	2) GD TC 447	•	1NUU 392
	. C. CD C) HEVERB(U) =T2		1NOU 393
	.C.CCC1 DBLEFB(J) =T5	••	INDU 394
•	.C.(00) STEPUR(J)=T4		INOU 395
	.C.(OC) STPLOW(J)=T5		1NDU 356
) = [APSAY(2) . GT. 0		1NOU 397
)=IARRAY(2).EG.2		1NDU 398
447 CONTINUE			INDU 359
GD TO 20	- · · · · · · · · · · · · · · · · · · ·		INDU 400
C STARST CARD	•		INDU 4C1
	•NE-0) GO TO 200		SOA UCKI
ISN=DT1+		•	1NOU 4C3
	E2(ISN:ISTANC:NSTIST)		1 NOU 4 C4
= =	1.C) GO TO 452		INDU 405
NS1EST=N			INDU ACE
IST=NST&			IN2U 407
452 ISTANU(1			304 UCMI
I) CMATE 3			INDU 409
JEN=15+ C	•		INDU 410
	L.C.OR.JSN.EQ.ISN) GO TO	r 453	100 411
ESTANJO			IHDU 412
GD 70 20	•	•	INOU 413
	T)=IARRAY(1).NE.1	•	TNOU 414
NIAST=NM			INDU 415
PLHSIG(3		•	1NDU 416
	(1ST))GC TO 454		1NDU 417
PLHSIGUE			1NDU 417
PLH51512			IN5U 419
GU TO 20		•	100 410 224 UCHI
	*151) =T2 *#S&C		1NOU 421
	*151) =13*RSEC		INCU 422
GO TO 20			INDU 423
C CORREL CARD		,	INCU 424
455 ISN=DT1+	_ 65 n	•	INDU 425
151=0	• = 5 = 5		=
•	T.GT.()1ST=NUMBP2(ISK.15	CTANE, ROTECTS	INOU 426 Inou 427
	T.01 GC TO 457	5174441511511	INDU 427
NSTEST=N			
IS1=NSTE			INOU 429
457 ISTANULI			INGU 430 INGU 431
PLHSIG(4	•	•	
PLFSIG(5			INOU 432
PLHSIG(6		ATT CALLED	INOU 433
GO TO 20	t v	REPRODUCIBILITY OF THE	INGU 434
C BIAS CAPO		REPRODUCIBILITY ORIGINAL PAGE IS POOR	INDU 435
	.LL.C) GO TC 465	ORIGINAL PAGE	INOU 436
SHERAL COM		- 	INDU 437
BIASC(NB		,	INDU 438
• •	514 5) =T2		PEA DON!
	1.006+1.00=3		1NOU 440
= :	OF 640 FLEAT (TYMO)		INOU 441
•	• \$1 2+1 • \$0-4		INOU 442
	• CD 240FLOAT (IHM)		INOU 443
i i	•	**************************************	INOU 444
	CO. C) ESTRT(NELAS) = TROAY	(IYME: IHM:SEC) +AIT IME(DSTART)	INOU 445
	1.656+1.00m8	≒ F	INDU 446
1 165 - 147	140 CTI & VOTO		INOU 447

```
T4=T4-1.CDG+DFLCAT(IYMO)
                                                                           INDU 448.
                                                                           1N3U 449
      IHM=T4/1.00 2+1.00~4
      SEC= T4- I. CO 240F LOAT (IHM)
                                                                           INOU 450
      IF(IYME.GI.C) REPAC (NRIAS) =YMCAY(IYMO.1HY.SCC)+A1T [ME(DSTART)
                                                                           INDU 451
      IF (IYMD .EO. C) BSEND (NRIAS) #DATAER
                                                                           INDU 452
      INDU 454
      BTYPE(NEIAS)=T5+0.100
                                                                           INOU 455
      GD TO 200 .
  465 J=1
                                                                           INDU 455
                                                                           1NDU 457
      VKITE(OUTP.446CC) CARDID.J
                                                                           INDU 456
      CALL HARDROID , CAPDIDI
   / GU TO 200
                                                                           INDU 459
C VARIOUV CARD
                                                                           INDU 460
  470 J= IARRAY(1)
                                                                           INDU AAT
      K= IARRA Y(2)
                                                                           INDU 462
      L=IAFFAY(3)
                                                                           1NOU 463
      J1 =1
                                                                           INDU 464
                                                                           INDU 465
       J2=2
      IF (J. 30.0.05. J. 6T.2) GO TC 471
                                                                           INDU 4EE
      L=1L
                                                                           INDU 467
      .12 = 1
                                                                           INDU 468
  471 DO 474 J=J1 J2
                                                                           INDU 469
      1F(L.ST.0) GU TO 472
                                                                           INDU 470
      READ(INTP +1 0003) (VARCOV(N+N+J)+N=1+5)
                                                                           INDU 471
      GO TO 473
                                                                           INDU 472
  472 READ(INTP .: CC(3) ((VARCCV(N.M.J).M=1.6).N=1.6)
                                                                           1N3U 473
  473 1F (K. ±0.C) GO TO 474
                                                                           INOU 474
     -CALL -LLEM(Str MST(1+J) +A+3++TRUE++PKEPLR)
                                                                           INJU 475
      CALL DN VERT (6 PREPLATE SUMI)
                                                                           INDU 476
      DO 467 I=1.6
                                                                           INDU 477
      DO 407 N=1+6
                                                                           INDU- 478
      A(IIN) = C. CE C
                                                                           INDU 479
      DO 467 N=1.6
                                                                           IN3U 480
  467 A(I+N) #A(I+N) +PKEPER (I+M) #VARCEV (M+N+J)
                                                                           INDU 461
      CD 469 I=1.6
                                                                           1NDU 452
      50 469 N=1+6
                                                                           INDU 483
      PSUM=0. (D)
                                                                           INDU 484 -
      DD 468 #=1.6
                                                                           INDU 465
  468 PSUMEPSUMEA (I +4) #PKEPLR(N+N)
                                                                           INDU 486
  469 VAPCOV(I:N:J) =PSUM :
                                                                           INDU 4E7
  474 CUNTINUE
                                                                           334 UCMI
      GO TO 200
                                                                           INDU 489
C DRB1 CARD
                                                                           INDU 490
  475 1 YETF T=0 T1+ .50 C
                                                                           INDU 491
      IYEND=TE+.EDC
                                                                           INDU 452
      IHY=T2/100.00+1.0-4
                                                                           INDU 493
      SIC=T2-EFLOAT(1HM4100)
                                      REPRODUCIBILITY OF THE
                                                                           INDU 494
      DOREL=YMCAY(IYSTRT.IHM.SEC)
                                                                           INDU 455
                                      ORIGINAL PAGE IS POOR
      DORB1=A1TIMU(DCFB1)+DCFB1
                                                                           INJU 496
      TOP: FURIAFRAY(1).ST.C
                                                                           INDU 457
      THM=T4/100.0041.0-4
                                                                           INDU 45E
      SEC=T+-DFLOAT(IHM#100)
                                                                           1H7U 499
      SOPRILERALAY(IY: NO AIMMASTO)
                                                                           INDU SCO
     (SIGROG) TAITIAK (GROGE, LURDG)
                                                                           INDU 501
      DRIBHITHC - 0000
                                                                           1NOU 502
      DC 476 I=2.4
                                                                           INJU 503
```

```
INDU ECS
- A76 DREFT#CRRTT#16.DC+CFLCAT(!AFRAY(!))
                                                                             INDU ENA
      IFICTERTALIANAS TE ARRETHAGA CO.
                                                                             INDU 505
      JDSAT(1)#75+0.500
                                                                             INDU
     *DRSH T=URBATAUADATA(AITIMO(T CHBIA7.CC)- 417 IME(COREI) )/7. >2
                                                                             INDU FOR
      DREFTHOTOGIVEEH.LZ
                                                                             INDU
                                                                                  50.3
      GD TOYEDS /
                                                                             INDU
C EDIT CARD
                                                                             UCMI
  480 IF(011.67.0.000) 2017N=171
                                                                             UCMI
      IF( 12.GT.G.CDC) FMSTGT=T2
                                                                             INCU
      90 10 200
                                                                             UCMI
S PRISIT CARD
                                                                             ULNI
  485 INSUPERIARRAY(1)
                                                                             INDU
      IF(INSUPRIGITA) INSUPRES
                                                                             INDU SIE
      SES OF OR
                                                                             INJU 517
E. PREPRO CKPO
                                                                             318 UCKI
 490 NOPERS ENDER PRAI
                                                                             1NOU 519
      DO 491 T=1.4
                                                                             DEE UCHI
 491
      IPRIPE (I INSERE ) = IARRAY (I)
                                                                             ISE UCHI
      INDPR: (1 *1300 00 )=0.71+.15.0
                                                                             INDU 522
      INDPRE (2.43PR PR)= 72+.100
                                                                             INJU 523
      PFINDX(1 NOPRES)=T3
                                                                             INOU 524
     PF[NDX(2,NDPRFF)=T4
                                                                             INJU 625
      GO TO 200
                                                                             INDU 526
COULT CARD
                                                                             INDU 527
  495 NOULL=NOULL+1
                                                                            SSE UCHI
      CULL(1 NOULL) = T1+,500
                                                                            INDU 529
      CULL(2.NOULL)=T2+.500
                                                                             INDU 530
      1F(13.70.0.00) GO TO 200
                                                                             INDU EST

    N@Ubip=N0Uble+1

                                                                             INDU 532
      CULL(1 | NOULL) = T3+ .5Fo
                                                                             ESS UGNT
      CULL(2,NCJLL) = 74+.500
                                                                            INDU 534
      GD TO 200
                                                                            INDU 535
C RECOIF (COEF) CARD
                                                                             INDU E36
  500 N=1ARRAY(1) *1 C+ IARRAY(2)
                                                                            INDU 537
      M=IARRAY(3) +1 C+ IARRAY(4)
                                                                            INOU 538
      T3=DA8 5( T3)
                                                                            INDU 539
      T4=DAB S( T4)
                                                                             INDU 540
      IF(N.EQ.0) GC TC 502
                                                                            1NOU 541
      K=2
                                                                            INDU 542
      IF(M.EO.G.AND.N.LT.3) K=1
                                                                            INDU 543
      TSIG=3.1630-3*#K
                                                                            INOU 544
      15(T5.GE.O.CDC) G0 T0 503
                                                                            INDU 545
      TS=CENCRM(N.M)
                                                                            INOU 546
      DT1=DT1*T5
                                                                            INDU 547
                                     REPRODUCIBILITY OF THE
      T2= T2 + T5
                                                                            INDU 548
                                     ORIGINAL PAGE IS POOR
      IF( T3.LT.TSIG) T3=T3+T5
                                                                            INOU 549
      IF( T4.LT.TSIG) 74=74*T5
                                                                            INDU 550
      T5=~1. (D C
                                                                            . INDU 551
      GO 10 620
                                                                            INDU 552
  503 IF ( 15.LE.O.CDC) GO TO 820
                                                                             INDU 553
      DT1 = CS(N+M+1)
                                                                            INOU 554
      T2=C5(31-N.33-M)
                                                                             INDU 556
  INOU 556
      IF( 13.GT. TSIG) 13=13 (LASS(CT1)
                                                                             INDU 557
      F(74.67.7815) T4 =T4 40AUS(T2)
                                                                            INDU 558
      SU31=21-N
                                                                            1NOU 559
```

	FCAD 2 DD A	·		
	ISt32=33-W		_	INDU SEO
	JF (T4.LF. G. CDG. BR. ARCNO.EG.	0) CS(15U81+15UB2)=T2	**	INDU 561
	IF (AFCNC.GT.0) GO TO 600	•		202 UCM
	IF(TELLE.C.CO) GC TO SOL	·		1NOU 563
	NC SA STENC SE ST +1			INDU 564
	6P VALD(KC SL ST) =DT1 XT3		•	INDU 565
	GP SIG(NCSEST) =T3			INDU 565
	IND XC S(NC S(ST +1) =1	·· .		INOU 567
	INC XC S(NC ST ST .2) =N		•	1NOU 568
	IND XC S(NC ST ST .3) = M			1NOU 569
	NO XORGENA XO (NO XORGIN)			INDU 570
	(W. DROX CH) OX AMECROX CM	·		INOU 571
501	IF(T4.LE.C.EC) GO TO 200		•	1N3U 572
	NC SEST=NC SEST+1		•	INDU: 573
•	GP VALUENCES ST 1=T2/T4			1NOU 574
	GP SIG(NCSEST) =T4			INDU 575
	IND XC S(NC FE ST ,1) =2		•	INDU 576
	INDXC S(NC ST ST , 2) = N			TNOU 577
	IND XC S(NC SE ST +3) = M			INDU 578
	(N. DEGRAN) OX AN = EECK ON		, - 2	INDU 579
	NE XORDENA XO (NEXORDEN)	•		INDU 580
	GC TO 200	•		INDU 581
502	J= H+ 1			INDU 582
	K= 33-M			INDU 583
	I1 = J ·		•	INDU SE4
	IF (MaGTaC) II = J+1		•	INDU 585
	DO 535 I=I1.30	•		INQU 586
	CS(I,J)=5.650 -	,		1NOU 587
5.)5	CS(31+1+K)=C.CDG .	•		1NOU 588
	GD TO 200	m*	•	1NOU 569
600	IF (T3.LE.C.CC) GC TO 601			1NOU 500
	IF (NGPAFC.LE. NSTAS) GC TO 2	, ,		INOU 591
	BIASSS(NGPAFC)=T3			1NOU 592
•	BTYPI (NGPARC) =1		•	INOU 593
	BSTAND(NGPAFC)=N#100+W			INDU 594
	BIASU(NGPARC) =D T1 /T3	•		INDU 595.
	NO XDEGERA XC (NO XDEG.N)	•		INOU 596
	NE XORDENA XQ (NE XORD . M)			INDU 597
	NGP4FC=NGPAFC-1	•		INDU 558
601	1F (T4.LE. C. CDC) GO TO 200			1NDU 599
•	IF (NGPARC+LE+NSIAS) GC TO 2	00		INDU 600
_	BIASSG(NGPA FC) = T4	· ·		INOU 601
·	BTYPL(NGPAFC)=2	REPRODUCIBILITY OF T	HE	1NOU 602
	PS TAN 3(NGPARC) = N*1 00+ N			100U 603
	Plasj(NGPARC)=TZ/T4	ORIGINAL PAGE IS POO	, and the second	INDU 604
	ND XDCG=MA XD (ND XDEG + N)		• •	1NOU 605
	NE XORDEMA XC (NE XORD . M)	·		INDU 606
	NGPASC=NGFA FC+1		•	1NOU 607
	GD TO 200	•	•	INDU 608
	CARD			INDU 609
525	JSTANC=IARTAY(1) *1000+IAREA	Y (2) *100+1ARPAY (3) *1041AR	2AY(4)	INDU 610
	IF (NAGNO-CO+C) GO TO 590	•		1NOU 611
ST	DATA TAPE UNITS		•	1NJU 612
	1C 63= JS TA NO Z1 40	·		INTU 613
	IARRAY(1) =USTANC-1085*100	•		113 UCM1
	1AFPX Y(2) =0 T; +C+500	•		413 UCN1
			•	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

C

c

	IARRAY(3) = 124 C. 500	•	U CN \$	616
•	IAR#AY(4) #T3+C. 500		UCHI	617
	J08S=20		UCHI	618
•	IF(MODULGIDS.4).EC.0) UCBS=21		THOU	
	DO 539 I=1.4		UGNI	620
	IF(HA-PAY(I)) 530,530,700	•	UCHI	621
530	F 1#FFAY(1) =0		INDU	622
	1ARPAY(1) = JCBS	•	1 ND U	_
_	GU TU 7CO	•	UCHI ,	
	NPDS CARD		INDU	
553	T D=CNATEN		UGMI	
	PRD(1)=DT1		UCMI	
	PPC(2)=12		1000	
	AC STATION POSITIONS		INDU	
-	READ(INTP-10005 HEND=900) CARDID-J		DENI	
	IF (CARLID-EC. CENAME(23)) GO TO 59	c	LMOU	
	I+ CR AT 2 A = CRAT 2 N		UCMI .	
	ANATEL = (SPATEA) CRATE1		1 NO U	
_	JNAME (NETARE) = CARDID	•	UCHI	_
	GO TO 560	•	INOU	
	COMMON PARAMETER INDICATORS	•	1100	
59) MINDUT=JSTANDAISC		THOU	
	OUTCON=FLGAT(MINCUT) #1.09-2		LNOU	
	NSTA = NSTE ST		1 40 U	
	IF (OUTCON-LE-C-) CUTCON=0.02	·	11000	
	TUDA IM# 06 1~CA ATEL =TUCK AM		טכאו	
	O INTUINA METUCHIM		DCHI	
	OIN TUDNIMETUDA ANALTHUCK AM	· -	INCLU	
	LIFT DOOR AND GA AN = TO DOX AM		UCHI	
	MINDUT=NA XO (MINOUT.1)	, and the second of the second	1000	
	L1 TRE S=DT1.GT.0.000	•	טכאו	
C Cox	APUTE FLATTINING	•	1 1100	
•	FLATEL COCVELAT	v.	INOU	
•	- FSG32=1.6004/C#FLAT**2	•	UCMI	
	FF SQ 32=AE *F LA T+F SC32		UCHI	
	AE SO =AE ++2 Lis Run Title	•	UCHI	
_	NETTE RON 11765 NETTE (OUTP:44447) NARCS		DCNI	
621	IF (NSTEST.GT.C) WRITE (DUTP.4444B)	NOT FOR	UCHI	
	WRITE(OUTP:44449) (DASH:I=1:15):T		UCNI	
	ND > 2 41 = ND x 2 E G	THE SAMAX COLL COLL CON SMINDOT	INDU	
	ND XCM2=ND XORD	•	. INDU	
	NOCUNS=MAXC(1 +NDCCNS)		INDU	
•	NDCDRS=MINC(RECENS, INDEXI-1)		UCNI	
	IF (NDENSTALEAC) NOCONS=0	REPRODUCIBILITY OF THE	INDU	
	NCONST=RCCOAS*(ADCAS+2)	ODIODIAL DAGE	עכאז	
C D21	INT GUODATENTIAL COMFFICIENTS & EAR	ORIGINAL PAGE IS POOR	INDU	
£	CALL CORFL(CUTP,NRMCFL)	TH MUTEL	UCN 1	
	PPNF=1+00/FLAT		UGMI	
	#RITT(FUTP.10153) (DASH.1=1.11)./	: .CONF.CU	UCNI	-
	IF (NSD-LE-C) GC TO 640	Committee & Committee	INOU	
	NACUENDENST-NGCNST		UCMI	
,	IF (NA DULL" - CYAND - NCONST - GT - C) CAL	1 : DEDD(1) CARCIES	UCMI	
C 021	FROM THE STATE OF MAJESTAN	·	INJU	
€ PR	CALL PORNI	•	UMI	
י כע י	TO SUFFACE PLASITY INFORMATION ON	SCOUTON DING	UCHI	
C 20-4	THE COUNTY AND A CHARLES THE TANK THE WALLOW DE	SCHALLE FILE	เหตุบ	671

		CO 633 I1=1 .4050.450			UCNI	672
		12=MING(11+449.4050)	·		UCHI	673
	€30	WF ITH (SCEC) (ISURF (I) + I = I1 + I2)	•	•	INDU	674
		DO 035/11=1.2026.450			UCN I	675
		12=141 NG (11+44 9.2026)			UCHI	676
		WRITE(SCRC) (SU(I):I=I1:I2)	,		INDU	677
	640	CONTINUE			UCMI	
		IF (NOSEST.LE.C) RETURN	·		UCNI	
C	MH I	TE ADJUSTED GEOPOTENTIAL A PRIORI	VALUES ON SCRATCH FILE		UCNI	
		00 650 II = 1 NC 52 ST , 225			INOU	
		I2=MINO(NCS7ST.11+224)			UCNI	
	650	WEITH (SCRC) (GPVALO(1),1=11,12)			UCNI	
_	ne m	FLTURY			TNOU	
		ERMINE NUMBER OF ARC FORCE MODEL (POTENTIAL COMFFICIENTS	EGUALIONS EXCEPT ADJUSTED		UCNI	
_		NEON(1) = C	· ·		1400	
	700	NEON(2)=0	والمرابع والمنطق المرابع فيالما مماه والرواك		UCNI	-
		IF(08815h) 60 TO 702		•	UCNI	
	, i	INPAFI=6#NSAT	•		INDU	•
		J=INPARI			INDU.	
	•	DO 704 I=1+NSAT	·		INDU	
		IF (A SAT(I) . LT . C . CDC . CR. MSAT(I) . L	5.4 CEO.1 CO TO 75/		UCMI UCMI	
		IF (URAG SG(I). LE. 0. 000) GO TC 7C1	2.3.0.0.0.3.00.10.734		UCNI	
		NEON(I) =NTON(I)+1	•	•	INDU	
		INPARI=INFAFI+1			UCHI	• • •
		ADD9(I)=INPAFI-J			INDU	
	761	JE (0591 SG(1). LL. 0. 090) GC TC 703			THOU	
	_	NEGN(1)=N_QN(1)+1	•		INDU	
		INPARI=INPAFI+1	•		INDU	
		ADDRD(1)=INFAPI-J			INOU	
	763	IF (EMISSG(1). LE 0. GDO) GC TC 704	•		UCNI	
		NCON(1) = NCON(1) + 1		•	UCHI	
		INPARI=INPARI+1			THOU	
	-	SPAC(I)=INPAFI-J			INCU	705
		CONTINUE			UCNI	706
С		NT ARC DESCRIPTION			UCHI	707
	762	WRIT. (OLTP+10302) ARCNO+(DASH+I=		_	INDU	70e
		IF(ISATID(1).GT.0) WRITE(CUTP.200	660) (I+ISATIC(1)+1=1+NSAT)		INDU	759
		WEITL(OUTP+10303) TITLE			UCNI	7:0
		WRITE(OUTP+10150) (DASH+I=1+8)		•	UCNI	711
		IF(ORBIEN) GO TO 705	•	•	UCNI	712
		WRITE (OLTP. 10151) INNWAX. CCNVPG.	INNMIN		UGNI	713
		WRITA(OUTP.10102)	REPRODUCIBILITY OF THE		UCNI	714
		WRITE(OUTP.10102)	ORIGINAL PAGE IS POOR		UCMI	715
		G0 T0 71C	ORIGINAL PAGE IS FOOK		UCNI	7:6
_		WEITE(OUTP.10152)			UCHI	
·		NT ARC FORGE MODEL DESCRIPTION	•		INOU	
	110	U=INDIX1-1 R-TNDIX1-1			UCNI	
		K=INDIX3~1 WRIT-(OUTF+10149) (DASH+I=1+11)+.			UCNI	
		IF (NU XDLG + GT+ U) CALL EFFOR (12+CA)			UCNI	
	•	IF (NO KOPO + ST. K) CALL SERROP (13.CA)			UCNI	
		\$0 725 1=1.6	PLICE.		TNOU	
		IF(1.GT.NACRY) GC TC 715	•		UCMI	
		IF (MAGE 1(1) +GT+ C+ 300) GG TC 720			INDU	
	715	#FIT (OUTP-10154) 1.800175(1)	, •		INDU	
		The second of th			UCHI	727

```
GO TO 725
                                                                               INDU 728
  720 WRITE(OUTP.10155) I.(BODIES(1).J=1.2).MBOCY(1)
                                                                               PS7 UCNI
  725 CONTINUE
                                                                              INDU 730
      1F((LDVS(1).Eq.0.050.AND.LCVE(2).Fq.0.0.0).CF.(MBODY(1).Eq.6.0F0
                                                                               INDU 731
          •A 40 • MBCCY(2) • E0 • C • CDU) ) GO TO 850
                                                                               INDU 732
      IF(MEOU Y(1) - TO. C. COO) WRITE (CUTF. 11002) (TICES(I), I=2.7)
                                                                               INDU 733
      1F(MODDY(2).50.0.000) WRITS(CUTF,11032) TIDES(1),(TIDES(1), I=4.7) INDU 734
      IF (MEDE Y(1) +NE + 6 + CDC + AND + MECDY (2) + NE + C + CDG ) | WRITE (OUTP + 1100 2) TIPESINOU | 735
      WRITE(OUTP:11003) LOVE.
                                                                              INDU 736
      GD TO 860
                                                                              INOU 737
  ESO WRITE (OUTP, 11 CC1)
                                                                              357 UCMI
  860 DC 743 I=1.NSAT
                                                                              INDU 739
      ACPRINT=ASAT(1).GT.C.COC.ANC.MSAT(1).GT.D.CCO
                                                                               INOU 740
                                                                              1NOU 741
      NRITH(OUTP,10156) I
      IF.(CD(1).GT.G.CDO.AND.NCPENT) GC TO 730
                                                                              INOU 742
      WRITE(DUTP.10158)
                                                                               INCU 743
      GO TO 735
                                                                               INDU 744
  730 IF(ADDR(I).FO.0) WRITE(CUTP,10189) CD(I)
                                                                               INDU 745
      IF(ADDR(I), GT. 0) WRITE(EUTP, 10804) CD(I), DRAGSG(I)
                                                                              INOU 746
     - 1F (AUDRE(1) .F G. G. AND. COD(1) . GT. G. GES) WPITE (OUTP. 10157) COD(1)
                                                                              INDU 747
      IF(ASURD(1).GT.0) WPITE (BUTP.10502) C[D(1).DPGDSG(1)
                                                                               INDU 748
  735 IF(EMISS(I).GT. 0.000.AND. NORRNT) GO TO 740
                                                                               INDU 749
      WRITE(OUTP-10160)
                                                                               INDU 750
      GO TO 745
                                                                               INOU 751
  740 IF(SEAD(I).tQ.G) WEITF(OUTP.10161) PPECSS.EMISS(I)
                                                                               INOU 752
      IF(SMAD(1), GT.C) WRITE(CUTP.10503) EPPESS, EMISS(1), EMISSG(1)
                                                                               INDU 753
 2745 IF (NOPERT) - WELTH (CUTR (105%4) ASAT (I) ASAT (I)
                                                                               INDU 754
      *#RITE(UUTP+10102)
                                                                               INOU 755
      WRITE(OUTP.10118) (DASH.I=1,21)
                                                                               INOU 756
      CO 750 I=1.NSAT
                                                                               INDU 757
      %FIT2(GUTP+10117) 1+(GEPAR(I+J)+(EQNINT(K+J)+K=1+3)+J=1+2)
                                                                               INDU 758
      IF(.NOT.VAPSTP(I)) WRITE(CUTP.10119) (STEPSZ(I.J).(EQNINT(K.J).
                                                                               INOU 759
         K=1,3),J=1,21
                                                                               INDU 760
      IF (VARSTP(I)) WELTE (CUTP (10121)
                                                                               INDU 761
      IF (VARSTP(1)) WEITE (CUTP, 10120) (LONINT (K, 1), K= 1, 3), STEPSZ( 1, 1),
                                                                               INOU 762
         STIP LP(I).STPLCW(I).DBLERE(I).HLVLEE(I).(EGNINT(K.2).K=1.3).
                                                                               INDU 763
         STEP SZ (1 (2)
                                                                               INOU 764
      RTCU(I) = RTOL(I) **2
                                                                               INDU 765
      CTOL([] = CTOL([] * *2
                                                                               INDU 766
      HLV:RH(I)=HIV:RH(I)\neq *2
                                                                               INDU 767
  750 CBLXF3(I)=CELLF8(I)**2
                                                                               INDU 768
C PRINT CUTPUT REQUESTS
                                                                               INDU 769
    : JJ=INSUPP
                                                                               INDU 776
      IF (DORELLET. 9. COO. AND. JJ. LE. C. AND. . NOT. (FLTLSW. OR . XYZFSW. OR . XYZLSKINDU 771
         *37. GPCF SWI) GC TO 765
                                                                               INDU 772
      WRITE(ULTP.10162) (DASH.1=1.23)
                                                                               INDU 777
      IF(PLTLS%) #51T/(OUTP,10164)(ITN#5(I),I=2,4)
                                                                               INDU 774
  755 IF (DORBILLT.0.000) GO TO 756
                                                                              1NOU 775
      CALL DATE SCEOPEL . LAND . I HM . SECT
                                                                               INOU 776
      CALL DATESCOOF STORT YMED ATHREAST CO.
                                                                               INDU 777
      WPITA(OUTP:20010) TYVO:THU:SAC:TYMD::THMD:SECE
      DT1=DRBRT#8.6404
      WRITH(DUTP)SU(50) DIE
                                                                               INDU 780
      IF ( . N IT . TOWLE ( ) GO TO 756
                                                                               INDU 781
      WRITE (ULTP.21662)
                                          REPRODUCIBILITY OF THE
                                                                               INDU 702
      WRITHOUTPARTEGOS
                                                                               INDU 783
                                          ORIGINAL PAGE IS POOR
```

```
756 IF(.NJT.(XYZFSW.OR.XYZLSW)) GO TC 7C57
                                                                              1NOU 784
      IF (TORIFT) WHITE (CUTP #20064)
                                                                              INDU 765
      IF(TORIFY) VPITS(OUTP.20060)
                                                                              INOU 726
      IF (XYZL 5 K.A. NO . XYZE SW) GC TC 757
                                                                             1NOU 787
      1F(XYEF Sw) | WFITE(OUTP+LOISS) | ITNMS(1)+(ITNMS(1)+1=3+4)
                                                                              387 UCHI
      IF ( XYZL SW) VRITE ( DUTP .10165) (17 NMS ( 1 ) . 1=2.4)
                                                                              1NDU 789
      GO TO 7056
                                                                              INDU 790
  757 WRITE(ULTP+10165) ITNMS(1).(ITNMS(1).1=3.5).(ITNMS(1).1=2.4)
                                                                              INDU 791
 7656 [F(CASTSW) GO TO 7057
                                                                              INDU 752
      IF (FA TE .GT. C.) WRITE (CUTP.20025) RATE
                                                                              INDU 793
      WRITE(OUTP & IC167)
                                                                              INDU 794
 7057 if (.N.)T. DEF 189) GC TO 758
                                                                              INDU 795
      CALL DATE SCOOPBIT (I YMD (IHM (SEC))
                                                                              INDU 796
      CALL DATE SEDA YEND TEYNOL THME , SECE)
                                                                              INDU 797
      WRITE(DUTP, 20020) IYMD, IHM, SCO, IYMDE, IHME, SECE
                                                                              1NDU 798
      WRITE(OUTP.10166) PATE
                                                                              INDU 799
      IF (RVTP.GT. C) KRITE (CUTP.20030)
                                                                              DOS UCHI
  758 IF(GPUF SW) VFITE(OUTP.) 0182) ITNMS(1).(ITNMS(1).1=3.4)
                                                                              INDU BCI
  760 IF (DRBTSN.CR.JJ.LE.C) GO TO 765
                                                                              INDU 802
      WEITE (OUTP - 20040)
                                                                              EOS UCHI
      IF (MOD(JJ.2).80.1) WRITE(DUTP.20041)
                                                                              INDU BOA
      IF (JJ.EC. 3) WEITE (OUTP.20042)
                                                                              1NOU 805
      IF(MOD(JU14).GT.1) WRITE(CUTP.20043)
                                                                              INDU 806
      IF (JJ. EQ. 4) WEI TE (CUTP. 20044)
                                                                              TNOU BC7
C PRINT NOWINAL DEBIT
                                                                              INDU BCB
  765 EO 769 I=1.NSAT
                                                                              INDU BC9
      WFI"E(DUTP,10168) I, (DASH, J=1,28)
                                                                              INDU 810
      15 (37 L 4. G T. C) | WRITE ( GUTP 120110 ) | TEL 4
                                                                              1NJU 811
      :(8.1±1.0) 1 MING 1: 022249. MHYB1. ON YHZI. FZYFI (00105. FTDO) 4TIA#
                                                                              INDU 812
     . [OFBIL(J.I).J=1.6)
                                                                              INDU 913
  .769 IF (.NOT. OFE TSK) WELT ( (OUTP. 10173) ( (VARCOV (J.K. 1).K=1.6).J=1.6)
                                                                              INDU 814
      IF (TORDEC) CREET=OFBRT+1.000
                                                                              INDU 815
      DD 767 K=1.NSAT
                                                                              INDU 816
    11=1
                                                                              INDU 817
      CO 766 I=1.6
                                                                              1NDU 818
      DD 765 J=1.6
                                                                              INDU 819.
      SUM1(I1)=V4FC CV(J.I.K)
                                                                              INDU 825
  766 11=11+1
                                                                              189 UCMI
      CALL SYMINV(SUMI +6+6+VARCCV(1+:+K))
                                                                              INDU 522
      T1 = 1
                                                                              INDU 823
      to 767 I=1.6
                                                                              FES UCHI
      £0 757 J=1.€
                                                                              INOU 825
      VARCOV(J.I.K) = SUM1(I1)
                                                                              INDU 825
      VARCUV(I.J.K) =SUM1(II)
                                                                              INDU 827
  767 11=11+1
                                                                              BIB UGHI
COPPINT SUMMARY OF PREPROCESSING INSTRUCTIONS
                                                                              PSS UCMI
      IF (NOPERPEANDED) CALL PRATER (CUT PA/TYPE)
                                                                              DEB UENI
C PRINT NUMBERS OF MEASUREMENTS WHICH ARE TO BE CULLIFO
                                                                              TEB UCHT
      IF (NOULL:ED.C) GO TO 773
                                                                              THIU 832
      CO 769 J=1.NOULL
                                                                              EEB UCHI
  768 IF(CULL(2,J).10.6) CULL(2,J) =CULL(1,J)
                                                                              INDU 834
      #RITT (DUTP+20070) ((CULL(I+J)+I=1+2)+J=1+NCULL)
                                                                              1NDU P35
C PRINT SIGNAS TO BE USED FOR MEASUREMENTS.
                                                                              INDU 835
  776 AFITE (JUTP - 10000)
                                                                              1NOU 837
      MEITH COUTP+12610) ATYPE (2) +SGPANT (2)
                                                                              INDU PER
      WE IT COUTP . 106201 UNITS (3)
                                                                              140U 839
```

```
TNO1/ 840
      WRITE(OUTP+10613) ATYPE(3)+SGPFRT(3)
                                                                           TNOU 841
      WRITH (OUTP, 10630)
      WEITE (DUTP . 10670) ATYPE (4) .SGPRKT (4) .UNITS (3) .ATYPE (11) .SGPRKT (11) INDU 642
                                                                           EAR UGHT
      WEITE (DUTP : 10620)
      DO 780 1=1.7
                                                                          448 UCINT:
                                                                           1NOU 845
      IF(1.GT.1.AND.1.LT.5) GC TO 780
      WRITE(OUTP (10610) ATYPE(I) (SGPENT(I)
                                                                           INDU 846
      IF(I (H2.5) VPITE(OUTP.10620) UNITS(I)
                                                                           INDU 847
    - IF(1.±0.5) %%ITE(OUTP:10625)
                                                                           INOU 848
      PAS UGAT
      IF(I.20.5) WRITE(OUTP (20625)
                                                                           INOU 850
      IF (I.ME.S) WPITE/OUTP-10620) UNITS (1)
                                                                           INDU 851
  780 CONTINUE
                                                                           INDU 852
      IF (IGEC 5. GT. 2) WRITE (CUTP, 10640) (ATY FE(1), SCPRNT(1), I= 15. 26)
                                                                           INDU 853
      K#(IGEOS+1)/2-IGEOS/4
                                                                           INCU 854
      IF(K. TO.1) WAITE(CUTP. 1068C) (ATYPE(I). SGPANT(I). I=27.30)
                                                                           INOU 855
      IF(NSIG.FIG. C) GO TO 784 ....
                                                                           1NOU 856
      00 783 I=1,NSIG
                                                                           INQU 857
      IF(ISTNC(1).E0.0) GO TO 783
                                                                           INCU 858
      11=IMTYPL(1)
                                                                           INOU 859
      IF(11.L2.C) 11=31
                                                                           INDU BEC
      MTYPE=: #TYPE((1)-(IMTYPE(1)/8)*7
                                                                           109 UCHI
      WRITE(OUTP,10610) ATYRE(II),SIGCHG(I)
                                                                           1NDU 862
      WRITE (OUTP.10650) ISTNO(I)
                                                                          EBB UCHI.
      IF (MTYPE.E0.5) WRITE (EUTP.10625)
                                                                           INDU E64
      IF(MTYPE.20.2) WRITE(CUTP.10820) UNITS(3)
                                                                           100 B65
      "IF (MTYPE LEGISLORIMINASTIGT. 28) WRITE (OUTP, 10636)
                                                                           INDU 666
      IF (MIYPE .CO.27) WPI TE (OUTP .10660)
                                                                           INDU 867
      IF(MIYPS.10.28) WRITE(OUTP.10690)
                                                                           SAS UCHI
      IF (MTYPC.EC.1.OF.MTYPS.GT.5) WFITE(CUTP.10620) UNITS(1)
                                                                           INDU 869
      IF(IMTYPE(I).GT.26) MTYPE=I1
                                                                           1NOU 870
  763 CONTINUS
                                                                           INCU 871
  784 MITYPEFIGEDS
                                                                           INDU 872
C MPITE ELECTRONIC SIAS INFORMATION ON SCRATCH FILE
                                                                           INDU 873
      WRITE(SCRC) BESTNO
                                                                           INOU 874
      WPITT(SCAC) BETYPE
                                                                           INOU 575 '
      IF (.NAT. SLOUEN) GO TO 895
                                                                           INDU 876
      DD 895 1=1.4
                                                                           THOU 877
      ITAPE=KTAPES(I)
                                                                           STR UCHI
      IF(1T4PE.EQ.5) GO TO 890
                                                                           INDU 879
      IF(ITAPE.EQ.IAFRAY(I)) GC TC 890
                                                                           INOU 880
      IF(ITAPLIANC) REWIND ITAPE
                                                                           INDU BRI
  890 CONTINUS
                                                                           23B UCHI
  ess IF (DRETER) ATTUAN
                                                                           SSB UCKI
      IF (NEIA SHALEAC) GO TO 880
                                                                           INDU 864
C PRINT FLECTPONIC FLASHS TO BE EXTRACTED
                                                                           INDU BRE
     -MRITH (GETP.44700)
                                                                           1NOU 886
      wkite(Outp.44710) (BESTNO(1).60TYFE(1).1=1.NFIASE)
                                                                           INDU SE7
  E30 I1=1G:05+1
                                                                           INDU PPE
C CALL SUPPOUTING TO FOAD DATA
                                                                           TNOU BE9
      GO TO (785.786.786.737.789).11
                                                                           THOU BEE
      WRITE (DUTP,4452C) IGECS
                                                                           INDU AS!
      CALL IFFOR(7.CAFDID)
                                                                           SER DOM!
      AL TURN
                                                                           THOU AGE
  785 CALL DOC DRG (MSTARD)
                                                                           INOU 854
      SC TO 750
                                                                           1NOU 695
```

	·		,
· 786	CALL GE CSFD (NSTARD)	INDU	
	69 TO 750	INDU	897
767	CALL POFRE	UCMI -	898
	GU TO 750	UCHI	899
	CALL SINEC(NSTARD)	INOU	900
790		UCMI	901
	DD 792 I=1.4	UCNI	902
	ITAPE=IAFFAY(1)	UCNI	903
	IF(ITAPE.GT.C) REWIND ITAPE	UCAL	904
792	CONTINUE	UCHI	905
	GO TO 758	UCNI	
794	DO 756 I=1.4	INDU	907
796	KTAPES(1)=IARFAY(1)	UCNI	908
799	IF (NOTA S.FQ.C) RETURN	INDU	909
C PRI	NT ADJUSTED BLAS INFORMATION	INDU	910
	EINES=0	INDU	
	WPITE(GUTP+16416)	UCNI	912
	DO éci I=1.NE1AS	INDU	-
	II=RSTANG(I)	UCNI	
	SSTAND(1)=NUMFR2(II, ISTAND, NSTA)	INDU	
	11=0 STA NO(1)	INDU	
	1F(11.30.6) 60 TO 801	INDU	
	T2=T1M1 NG	UCHI	
	12=8TYPE(1)	UCNI	
	IF(18.GT.0) T2=ATYPE(12)	INOU	
	12=12+1	טכאו	
	IF(11.L3.15) UNIT=UNITS(12)	UCNI	
	IF(11.50.27) UNIT=UNITS(1)	1800	
	IF(11.50.2e) UNIT=HEFTZ	INDU	
	IF(11.67.28) UNIT=UNITS(4)	INDU	
	1F(MOD(LINES,5).EG.C) WRITE(CUTP,10102)	INDU	
	LINTS=LINTS+1	UCNI	
	WRITE(CUTP.10411) ISTANC(II).T2.FIASC(I).UNIT.BIASSG(I)	UCNI	
		INDU	
	THE PROPERTY OF THE PROPERTY O	UCHI	
	CALL GATE SEPSTRICED . LYMOL . IHML . SEC)	UCMI	
	CALL DA TES(BSEND(I), IYMU2, IHM2, SEC)	UCNI	
	WRITH(OUTP.10412) IYMD1.1HM1.1YMC2.1HM2	INDU	
801	CONTINUE	UCMI	
	RETURN	TNOU	035
C IF	END OF FILE ENCOUNTERED WITHOUT A PRECEDING DATA CARD, TERMINATE	INDU	G 3.6
900	CALL EFROF(6,CAPDID)	INDU	
•	9013	UCNI	
C =02	MAT STATEMENTS	UCNI	
10003	FOFMAT(6012.6)	UCNI	
10162	FORMATCIALL AS X52H SATALLITE X.Y. Z. AND GROUND-TRACK PLOT REQUESTED	INDU	
	•FOR • 246 • 43 • 44 • 246 • 43)	UCNI	
	FORMAT(A6,411,4015.3,010.8)	TNOU	
13410	FORMATCHHI, 39%, 45HNGMINAL ESTIMATES OF ADJUSTED BIAS PARAMETERS/	UCMI	
	• 1HU.18x.7HSTATION.5X.9HPARAMETER.12X.15HA PRICEDI VALUES.12X.	1400	
	· ZEHC CVIHAGI YYMNID HHNMY19X.GHNUNHEF.7X.4FTYPE.	UCHI	
	2 11X.4H6IA5414X.6H5IGMA411X.5H5\GIN.13X.5H(No)	INDU	
	EMEMATE19X.16 .5X.A6 .5H DIAS.2X.1FC11.2.2X.70.011.3)	TNOU	
10412	FORMAT(1M++78X+10+15+6X+10+15)	טכאו	
10413	FORMATCINE . 78X . 2 HICIFFERENT BLAS FOR EACH PASS)	TNOU	
	FORMAT(1x)	INOU	
	•	11450	- · 1

```
10117 FUPMAT(THO:5X: *CONELL PREDICTOR-CURRECTOR FOR SAT a NO:*:12:
                                                                          1NOU 952
         2(/10X+12+ TH OFFER FOR ++2#6+45))
                                                                          INDU 953
10118 FORMAT(1H1.EX.21HNUMERICAL INTEGRATION/6X.21AI)
                                                                          INOU 954
10119 FORMAT(SX:F6:1: SUCCNO FIXED STEP FOR ::248:45)
                                                                          INDU 955
10120 FORMAT(10x, FOR 1,248,45/15x,0PF6,1,1 INITIAL STEP SIZE1/
                                                                           INDU SE6
         15X+F6.1.4 MAXIMUM STEP SIZE*/15X+F6.1.4 MINIMUM STEP SIZE*/
                                                                           INOU 557
         $5X, *STEP SIZE INCREASED FOR FRYDICTOR-CORRECTOR DIFFERENCE ** INDU 958
         PLESS THAN **1PD7*1** METERS*//15X.*STEP SIZE CECREASED FOR ** INDU 959
         *PREDICTOR-CORPECTOR DIFFERENCE GREATER THAN *, 1PD7.1, !METER S*) INDU 960
10121 FORMATCEX. "W REABLE STEP INTEGRATION USED!)
                                                                          132 UCM1
10150 FDRMAT(IHC.5X.SHRUN TYPE/6X.6A1)
                                                                           SOC UCKI
10151 FORMAT(1H0.5X.**DATA FEDUCTION +**,13.** ITERATIONS OF CONVERGENCE **,1NDU 963
             *WITHIN *.2PF4.1.* PER CENT!/IH .7X.*WITH A MINIMUM DE!.12. INOU 564

    ITERATIONS!/)

                                                                           TNOU 965
10152 FORMAT(1H0 5X19HORBIT GENERATOR FUN // )
                                                                           INDU 566
                    (1HC.5X11HFORCE MCTLL / 6X11A1 // 6X
10149 FORMAT
                                                                           1NOU 567
          28HA . GE CPCTENTIAL COEFFICIENTS /
                                                                           BBR UCMI

    10x, "LISTED COSEFICIENTS THEOUGH DEGREE".13.* AND ORDER*, 13//6x, INDU 969

             22HE - CTHER PERTURBATIONS )
                                                                           INDU 970
10153 FORMATCINCEXTINEARTH MODILM 6X1141// 6X15456M1 MAJOR AXIS 4X
                                                                           INDU 971
             1 CHF LATTENING 4X 22HGFAVITATIONAL CONSTANT / 9X8H(METERS)
                                                                          INDU 972
         22X.22H( ME TERS##3/SUCCNDS##2) //ex.F11.2.7X.3H1./.F7.3.7X.
                                                                           INOU 973
             1PC1 4.8 //)
                                                                           INDU 574
10154 FORMATCIM . EX.II.2H. .A7.1 GRAVITATION NOT APPLIED!)
                                                                           INDU 975
10155 FORMAT(1H +6X;11;2H. +A7; GRAVITATION APPLIED - RATIO OF *:A7;
                                                                           INDU 976
     . * MASS TO MASS OF EARTH #*.1 FC13.6)
                                                                           INOU 577
10156 FORMAT(ING.6X, 'SAT. NC. ', 12, ' FEFTURBATIONS')
                                                                           INDU 578
10188 FURMAT(10%, 'S. ERAG NOT APPLIED!)
                                                                           INDU 579
16157 FORMATCISA - DRAG CORFICIENT HATE = ++++++41
                                                                           INDU SEO
10159 FORMAT(10%, to. DRAG APPLIED!/15X, DRAG COEFFICIENT =1,F7.4)
                                                                           132 UCMI
10160 FORMAT(10X+ '9+ SOLAR FADIATION PRISSUES NOT APPLIED!)
                                                                           INOU 982
10161 FORMAT(10%. 19. SOLAR RADIATION FEESURE APPLIED*/15%. 14 SOLAR 1.
                                                                           INCU 983
         *RADIATION PRESSUR& (NEWTONS/WETER**2) =*,1P010.3/15x.
                                                                           INDU 984

    16H= RSFLTCTIVITY = *0PF7*3)

                                                                           INDU SES
10502 FORMAT(15x. + A PRIORI DRAG CORFFICIENT RATE = 1.F8.4/15x.
                                                                           INDU SAG
         *- STANDARD DEVIATION OF A PRIOR! DRAG CORRECTION PAYE = ..
                                                                           INOU SET
                                                                           A32 UCMI
10503 FORMATCIH .5X.444H9. ADJUSTID SCLAR FACIATION PRESSURE APPLIEDZISX.INDU 989
        47H- SCLAR PAGIATION PRESSURE (NEWTONS/METUR**2) =.19010.3/15x, INDU 990
        25M- A PRIORI REFLECTIVITY = .C FF7.3/15X.
                                                                           INDU 991
       44H- A PRIDAL REFLECTIVITY STANDARD DEVIATION =+ F7.3).
                                                                           SPR UCHI
10504 FORMAT(10x,46H8. DRAG APPLIED WITH DRAG COEFFICIENT ADJUSTED/
                                                                           INCU 993
    - . 15x.29H- A PRICE! DEAG COSEFICIENT =.F8.3/
                                                                           INDU 594
       15X.51H4 STANDARD DEVIATION OF A PRIORI GRAG COSMFICIENT =.F8.2)INDU 995
10514 FORMAT(15x,46H- BATELLITT CROSS SECTIONAL AREA (MTTFFS**2) =,
                                                                           1830 986
       1POIC.3/15X.30H- SATILLITE MASS (KILOGRAMS) =.010.3)
                                                                           INDU 957
10162 FORMAT(IHEZ-60x-1SPECIAL CUTPUT REGUESTS1/IH .EX.23A1/)
                                                                           1NOU 558
10164 FORMATCIHO. EX. 35HOLNARY PESICUAL TAPE REQUESTED FOR . 2A6. A3. A4.
                                                                           INDU 959
     1
             24 6 . A31
                                                                           INDUI DCC
10165 FORMATCIHI SX47HSATELLITY X.Y.Z AND GEDUND TRACK PROUESTED FOR
                                                                           INDU! CC1
             2A6+A3+A4+2A6+A3 1
                                                                           SOCIUONI
10166 FORMATCEX SHE VERY FOLD ABH SECONDS/1HD)
                                                                           INDULOGS
10167 FORMATCIN TXLAHAT DATA POINTS ZZ )
                                                                           INDUI 004
1 J173 FEEMATCHELEX.20HVAFIANCL/COVAFIANCE MATRIX //
                                                                           1N0 U1 005
             19X1HX 14X1HY 14X1HZ 13X4FX00T 11X4HY00T 11X4FZ00T ZZ
                                                                           INDUI CC6
          7X:1HX:2X:1Poll5:7/7X:1HY:2X:0(15:7/7X:1HZ:2X:6615:7/
                                                                           INDUI BOT
```

```
6x,4HXCOT,5E15.7/6X,4HYCCT,6E15.7/6X,4HZCCT,6E15.7}
                                                                              850 IUCHI
                                                                              TNOULC99
. 1016B FORMAT(IHI.EX. INCMINAL DRBIT FOR SAT. NO.1.12/6X.28A1)
.10005 FORMAT(A6,14,D15.3,3CX,A1)
                                                                              INDUIGIC
                                                                              INDUI 011
 10302 FORMATOTH: 10X.3HARC. 13.4 FUN OLSCRIPTION!/1H .10X.22A1)
                                                                              INOU1 012
 10303 FORMAT(1X/3(11X-10A8/))
 11001 FORMAT(7X,3H7. , CARTH TICKS NOT APPLIED!)
                                                                              INDUI 013
 11002 FORMAT(7X,3H7. . *CARTH TIDES APPLIED - *,7A5)
                                                                              1NOU1014
 11003 FORMAT(10x,"- K2 = 1,89,3/10x,"- K3 = 1,89,3/10x,"- PHASE ANGLE = 1, INDU1015
           F7.2. DEGEEFS!)
                                                                              INDUL 016
 10600 FORMAT(1H1.47X.31HMHASURCMENT STANDARD DAVIATIONS/1H3.50X.
                                                                              INDUI 017
            7HS TAITI CHI +1 3 X +5HSIGMAZIH +47 X +5 HNUMBEF + 3 X +4HT YPE +6 X +
                                                                              2101UCAI
             5H VALUE (2X (5HUNITSZ))
                                                                              !NOUL 019
                                                                              INDUI 020
 16610 FORMAT(1H +55X+A6+F16+1)
                                                                              INDUI 021
...10620 FORMAT(1H+,73X,A6)
                                                                              INDUI 022
  10625 FORMAT( 1H+ .70 X .4HMILS)
                                                                              INDU1023
  10630 FORMAT( 1H+ . 73 X . 6HCM/SEC)
  10640 FORMAT(3(49%,4MNCN1,3%,A6,F10,1,2%,6HMETERS/),3(49%,4HNONE,3%,
                                                                              INCU1 024
           A5.F10.1.2 X.6HCM/SEC/).49X.4 HNDNE.ZX.A6.F10.1.2X.6HMETERS/
                                                                              TNO UE 0.25
           49X.4HNCNE.3X.A6.F10.1.2X.4HE-05/4(49X.4HNCNF.3X.A6.F10.1.
                                                                              INDUI 026
           2 X.7H SEC END S/J)
                                                                              1 NO U1 0 2 7
  10650 FOPMAT(1H+,47X,15)
                                                                              IN1U1028
  10660 FORMAT(IH++73 X+7HNA NOSEC)
                                                                              TN0 U1 029
  10670 FORMAT( 48x+6H4LTYTF +2X+A6+F10+1+2X+45)
                                                                              INDU1 030
  10580 FORMAT( 49X;3HFLL;4X;46;F10;1;2X;7HNFNC3EC/
                                                                              INOU1 031
               49X, 3HALL, 4X, 46, F10.1, 2X, 10 HMICFCHEFT Z/
                                                                              INDUI 932
               49x,344LL,4X,46,F1C.1,2X,6HCM/SEC,2X,7HTWC-WAY/
                                                                              INDUI 023
                49X.3HALL.4X.A6.F10.1 .2X.6HCM/SFC.2X.9HTHFEE-WAY1
                                                                              INDU1024
  10690 FOR AA TOIM++73 X+1 OHMICFUHERTZ)
                                                                              INDU1 035
  20010 FORMATCINC, 5X, 25HOPB1 TAPE REQUESTED FROM , 216, F7, 4, 4H TO , 216,
                                                                              INDUI 036
               F7.41
                                                                              INDUI 037
  20020 FORMAT(1H0,5X,48HSATCLLITE X,Y,Z AND GROUND TEACK REQUESTED FROM ,INDU1038
               216,F7.4.4H TC ,216,F7.4)
                                                                              INDUI 039
  20025 FORMATOIN , 7X , SHE VERY , FIG. 2 , 12H SECONES AND)
                                                                              INDULC40
  20030 FORM T(1H1,5X,37HRV TAPE PROUSSIEE FOR FIRST ITERATION)
                                                                              INDUICAL
  20040 FORMAT(IHC.5X. "PESIDUAL PRINTING HAS EEEN REQUESTED FOR")
                                                                              INDULC42
  20041 FORMAT(1H+:460X:"THE FIRST INNER ITERATION"ON THE FIRST OUTER (;
                                                                              INDUIC43

    *! TE PA TI CY!/)

                                                                              INDU1 C44
  20042 FORMAT( 1H+, 42 X+ 4AND +)
                                                                              INDU1 045
  20043 FORMAT(1H+,46X, THE LAST INNER ITERATION ON THE LAST OUTER *,
                                                                              INOU1 546
            * LTE RATI EN * Z L
                                                                              1NO U1 047
  20044 FORMAT(1H++46X+'ALL ITERATIONS!/)
                                                                              INDUIGAB
  20050 FORMAT(IH +EX+22HOUTFUT REQUESTED FVERY+F9+3+8H SECONDS)
                                                                              INDUI 049
  INDUI 050
                14HPEFERENCE TIME)
                                                                              INDUICS!
  20062 FORMAT(INC.SK.9HORB) TARE)
                                                                              INDU1062
  20064 FORMAT(INC+5X+9HEPHEMERIS)
                                                                              INDU1053
  20070 FURMATCIH1:37x:39HINCIVIJUAL MEASUFEMENTS MANUALLY CULLED:
                                                                              INUU1 054
              1 X:17HFROM THE SOLUTION/1H0:33X:4 (12HMMASUFFMENT :6X1/
                                                                              IND U1 055
              1H +35X+4(7HNUMED9S+11X)/1H /25(1H +37X+4(15+3H TO+15+5X)/))1H0U1056
  20080 FORMAT(1XX(11X, 'SATELLITE ID FOR SATE NO. 1, 12, 1 IS1, 18))
                                                                              INDUI 057
  20100 FURWAT( 1HC+5X +
                                                                             920 LUGAI
                PERFERENCE TIME
                                    - YEAF MONTH DAY 1.16/
                                                                              INDUI 059
                1HG.5X.2CH [PCCH OF CLEMANTS + .
                                                                              INDU1 060
                1 X15HYCAR (MONTH + DAY 16 + A X19HHPUP + MINUTE + SICONE 14+ F7 + 3776X INDUIGH
                BEHINLETIAL FECTANGULAR CECHEINATES/140.
                                                                              1110 01 062
                16X1HX26X1HY26X1HZ/16X+3H(N)+24X+3H(N)+24X+3H(N)//
                                                                              END UI 063
                               REPRODUCIBILITY OF THE
                               ORIGINAL PAGE IS POOR
```

```
2X.7F3D28.10//15X4HXDCT.23X4HYDDT.23X4HZDDT/
                                                                             1NDU1064
             15X5H(M/S) +22X5H(M/S) +22X5H(M/S)//2X+4P3D28.13
                                                                             INDU1 065
             ^V1HC5X18HKEPLEFIAN &LEMTNTS/1HG,11X,1HA,12X,1HE,12X,1HI,7X,1NOULOC6
             BEHRA ASC NODE: APG PERIGEE: MEAN ANOMALYZIGK, BE(METERS),
                                                                             1NDUX 067
             13x,4(4x,9H(DuGREES))/1H0,CPF16,1,F13,9,4F13,6)
                                                                             INDU1 068
20113 FORMAJ(THE,5X, CODS DATA BASE ELEMENT SET+, 15, CUSFOC)
                                                                             INDULCES
44447 FORMAT(1H1.2C(/).1UX.*MULTI-ARC GEODYN RUN USING DATA FROM!.
                                                                             INDUIC76
             13. SATELLITE ARCS!)
                                                                             INOU1 C71
44446 FORMAT(1H +12x, 'with the adjustment of ', 13, ' station positions')
                                                                             INDU1 072
44449 FORMAT(1H0/10X, PUN DESCRIPTION //10X, 1541//3(10X, 1648/)//10X, 12,
                                                                             INDUI073

    GUTER ITERATIONS OR CONVERGENCE WITHIN . 2PF4.1. PER CENTINOWIC74

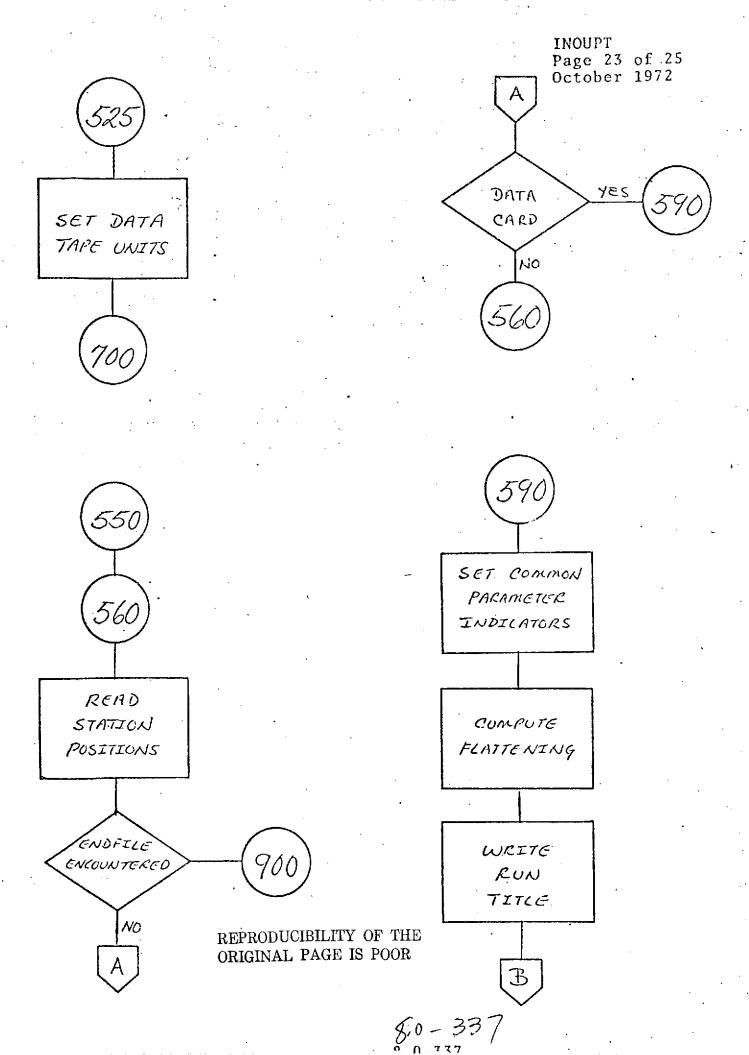
     1
              ZIEX: *NITH A MINIMUM CF!:I2: CUTER ITERATIONS! )
                                                                             INDU1075
44600 FORMATCIHI: XOX: "ILLEGAL CPTICN CARD INPUT!/IHC: 15X: "TXPL/NATION : INDUI: 076
     THE OPTION CAPE ",A6." IS ILLEGAL IN CONTROL STT., 12, 1H./1HO, 15X.
                                                                             INDU1 077

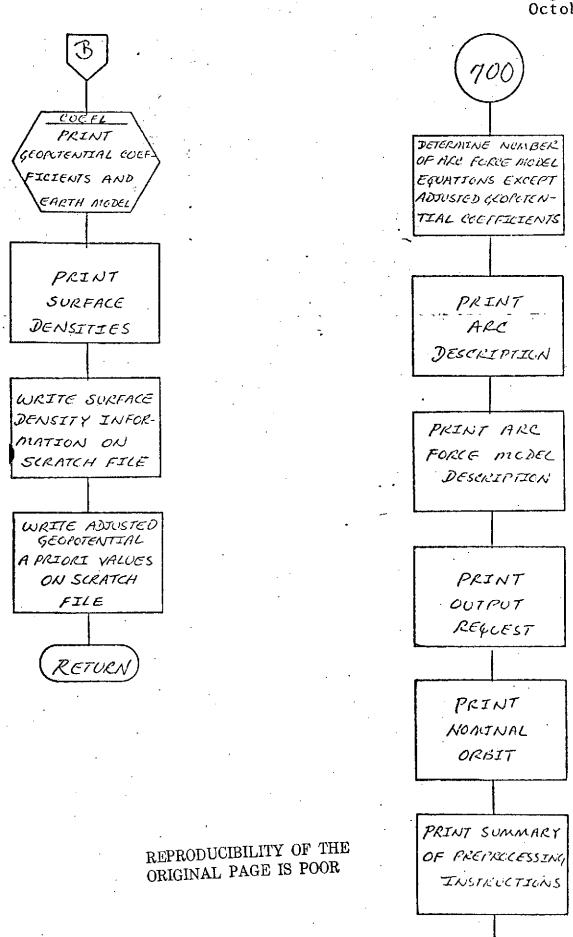
    * *PROGRAM ACTION : CARD IGNORED -- EXECUTION CONTINUING.* / )

                                                                             INDUIC78
44610 FORMATCIHI:20x: "ILLEGAL OPTION CAPO INPUT!/IHC:16x; "CXPLANATION : INDUI:079
     THE OPTION CARC 1.46.1 IN CONTROL BUT 2 APC1, 13.1 PRODUSTS THE 1/ INDUIGEC
         21X, ADJUSTNENT OF A COMMON ARC PARAMETER. (71HG, 15x, (PRD GRAM (, TNO U1 de)
         PACTION: THE REQUESTED COMMEN PARAMETER ADJUSTMENT WILL NOT BEINDULGES

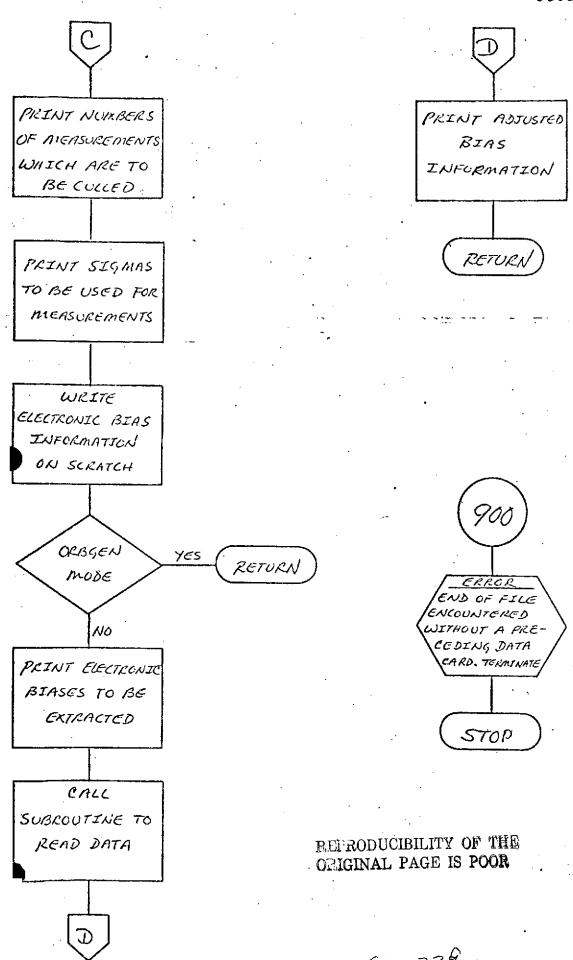
    PEPF DS NLC ++ */21 X , **E XECUTION CONTINUING.*/)

                                                                             INDU1083
44620 FORMATC1H1:20%: 'EXECUTION TERMINATED DUE TO IMPROPER 'SETUP: *//
                                                                             INDUICE4
         16X, "EXPLANATION: DATA TYPE INDICATOR ON EPOCH CARD = 1,12,
                                                                             1NOU1 085
         1 SPEATER THAN 41)
                                                                             DBD LUCKI
44700 FORMAT(1H1:38X: *MEASUREMENTS FOR WHICH ELECTRONIC BIASES WILL !:
                                                                             1 NO U1 087
         THE REMOVED 1/1HG (7(13HSTATION MEAS,4X), 13FSTATION MEAS/
                                                                             BBO IU CAI
         7( 3X +3HNC+ +4 X+4H TYPE+3X)+3X+3HNU++4X+4HTYPE/)
                                                                             INDU: CR9
44710 FORMAT(16.17.110.17.110.17.110.17.110.17.110.17.110.17.110.17.110.17.
                                                                             TNB U1 090
                                                                             TNOUT OCT
```





8.0-338 (C



8.0-339

NAME.		INTRP
PURPOSE		INTERPOLATION SUBROUTING
CALLING SE	Q UENCE	CALL INTRP(S.H.ICRDER.NN.X.FCT.M.SUM)
SYMBOL	1YPE'	DESCRIPTION
5	DP'	INPUT - DESIRED CUTPUT TIME IN FRACTIONS OF A STEPSIZE FROM TIME POINT OF SUM ARRAY
н .	CP	INPUT - STEPSIZE
IORDER	ī	INPUT - ORDER
NN .	1 .	INPUT - NUMBER OF EQUATIONS TO BE INTEGRATED
X (6;1)	D P	CUTPUT - CUTFUT ARRAY
FCT (3,1)	DP	INPUT - AFRAY OF ACCELERATION EACK VALUES
. H .	1	IRPUT - DISPLACEMENT INDEX SET BY COWELL
SUM	DP	INPUT - SUM ARRAY UPDATED BY INTEGRATOR
SUBROUTINE	S USED	COEF
COMMON BLOCKS		NENE
INPUT FILES		NONE .
DUTPUT FIL	£ 5	NONE

		,	
SUBROUTINE INTRP(S,H,I		INTP	39
* IMPLICIT FEAL *8 (A-H.C		TNTR	40
DIMENSION AF(20) AV(20)) -X(6.1) -FCT(3.1)-SUM(2.3.1)	INTR	41
DA TA SI / C.C G/ . I CF/C/	·	INTP	42
IF (S.EQ.SI.FND.ICR.EQ.	IORDER) GC TO 1	INTR	43
, \$1 ≖S		INTP	44
IUR=IORDER		INTR	45
C DETERMINE INTERPOLATION CO	EFFICIENTS .	INTR	46
CALL COMP (SALDADER APA	AV)	INTR	47
. ICL2=I9RDER+2		INTP	43
IOL1=fol2+1		INTR	4 C
1 DO 100 N=1+KN	. •	INTE	50
K 0 = N * M + 1		THITP	51
PO 100 J=1.3		INTP	52
A = 0.DO	REPRODUCIBILITY OF THE	INTE	53
A=0.00	ORIGINAL PAGE IS POOR	I+ITP	54
DO 10 K=1+1 OL2	OURIGIAM I TOOK	INTE	55 55
		4.116	J

	KK=K >-K	•			•			INTE	56
	A=A+AV(K) #FCT(J.KK)						•	INTR	57
10	B=B+AP(K) *FCT(J*KK)							INTR	58
	A=A+AV(10L1) #FCT(J.K	5-1 OL1)	•		•			INTR	59
	A=A4 SUM(1 .J .N)					•		INTR	€9
	8=8+5UM(1.J.N:)*(S-1.5	00) + SUM(2	.J.K)		•			INTR	61
	X(J.N)=8+H++2							STRI	62
	H*A=(N.8+J)K		-					INTR	63
50	CONTINUE	• :		•				INTR	64
	REJURN				•			INTR	65
	END					•		INTP	65

JANTHG

DESCRIPTION

JANTHG is a subroutine specifically designed for the GEODYN system. Its functions are to

- Recover the Greenwich mean sidereal time on Jan 0.0 of the reference year (θ_{g0}) , and
- Set up the solar flux and geomagnetic activity variation tables,

for each arc.

Note that this routine computes the 81 day (3 solar rotations) midpoint average of solar flux values for each arc.

```
NAME
                  JANTHG
PURPOSE
                  TO SELECT GREENWICH MEAN SIDEREAL TIME ON JAN C.O
                  OF THE REFERENCE YEAR FOR EACH ARC AND SELECT FLUX
                  DATA FOR EACH ARC FROM BLOCK DATA STORAGE AND
                  COMPUTE AVERAGE SOLAR FLUX VALUES FOR EACH ARC
CALLING SÉQUENCE
                  JANTHG (IEPYMD. IY.SFLUX, MGFLUX, MYMD. LYMD)
          TYPE
 SYMBOL
                  DESCRIPTION
  -ICPYMO I
                  INPUT -- DPOCH YEAR. MONTH. AND DAY
   IY -
                  INPUT - LAST 2 DIGITS OF REFERENCE YEAR
   SFLLX
           1 # 2
                  INPUT - SCLAR FLUX DATA
   (1)
   MGELUX
                  INFUT - MAGNETIC FLUX DATA
           1 * 2
   (1)
                  INPUT - START DATE FOR FLUX DATA
   MYND
                  INPUT - STOP DATE FOR FLUX CATA
 LYMC
SUBFOLTINES USED DIFF
COMMON BLOCKS
                  CGLOS
                             CONSTS
                                        FLXELK
INPUT FILTS
                  NONE
DUTPUT FILES
```

```
DOUBLE PRECISION FUNCTION JANTHG (IEPYMU. IY SPLUX, MGFLUX, MYMD, TYMD) JANT
      DOUBLE PRODISION THOTGO CRAD OTWOPE, AVELY, DELX, KP
                                                                                TVAL
                                                                                       ₹3
      INTEGER #2 MGF LUX(1) .SFLUX(1)
                                                                                 THAL
                                                                                       39
      COMMON/CGEOS/G5(2),THUTG5(15),G6(423)
                                                                                 JANT
                                                                                       ٠Ç
      COMMON/CONSIS/SPI(2) . STWOPI . SRAD . CRSIC(2)
                                                                                 THAL
                                                                                       41
      COMMONAFLYSEK // VELX (675) .CFLX (675) .KP (675)
                                                                                 INAL
                                                                                       42
C RIGHT ASCENSION OF GREENWICH FOR REFFERNCE JAN C.O
                                                                                 JANT
                                                                                       43
      JANTHOS THETGO (I Y-57) #CRAO
                                                                                       44
                                                                                 TUAL
      CALL DIFF (MYME +0.12 FYMO +0.10 AY +152C)
                                                                                       45
                                                                                 THAL
      CALL DIFF(NYMD.O.LYMD.O.IDAY1.ISTC)
                                                                                 JANT
                                                                                       4 é,
C FLUX VALUES ARE FOR 12 HRS. GMT OF TABULAR DATE
                                                                                 JANT
                                                                                       47
C NEED FLUX VALUES 1.5 DAYS BLFORE BARLIEST DATE FOR INTEGRATION
                                                                                 JANT
                                                                                       48
      ILAY=IDAY-2
                                                                                       40
                                                                                 TNAL
      YACI=SYA3I
                                                                                 THAL
                                                                                       50
      1F(10xY2.LT.1) 10AY2=0
                                                                                 THAL
                                                                                       £ 5
      IF (ICAY . L.T. 41) IDAY = 45
                                                                                       50
                                                                                 THAL
      IC # Y1 = I U # Y1 + 1
                                                                                       5.3
                                                                                 TVAL
      DO 20 1=1.675
                                                                                 JANT
                                                                                       54
      11=1+10AY2
                                                                                 TNAL
                                                                                       55
```

		JANT	56
IF(I1.G7.ICAY1) I1=IDAY1		THAL	57
KP(I)=MGFLUX(II) *1.0E-1	•	JANT	58
DFLX(I) = SFLUX(II) #1 • CE-1		THAL	59
12=1+1CAY+4C		THAL	6C
IF(I2.GT.IDAY1) I2=IDAY1		THAL	61
11=12+6C		THAL	62
AVFL x(I)=C.CDO	•	THAL	€3
C COMPUTE FLUX AVERAGE		THAL	64
DO 15 J=11.12		THAL	65
15 AVFLX(I)=AVFLX(I)+SFLUX(J)	-	THAL	66
20 AVFLX(I)=AVFLX(I)/810.000		JANT	67
RETURN		THAL	68
END		JANT	69
COUBLE PRECISION THETGO DEAD DT KCPI AVELX DELX AP		TVAL	70
INTEGER 42 MGF LUX(1) +SFLUX(1)		THAL	7:
COMMCN/CGEOS/G5(2) .THETGO(15).G6(423)	• *	JANT	72
COMMON/CONSTS/DPI(2) .DTWCPI .ERAD.DESEC(2)	•	JANT	73
COMMON/FL X3 LK /A VF LX (675) . CFLX (675) . AP (675)	-	JANT	74
JANTHS=THETGU(1Y-57) *CRAD	•	JANT	75
CALL DIFF (MYMD.D.IEFYMD.D.IDAY.ISLC)		THAL	76
CALL DIFF (MYMD .O.LYMD .O.IDAY1 . ISEC)		TEAL	77
IGAY2=1GAY		THAL	78
IF(IDAY2.LT.C) IDAY2=C		THAL	79
IF (104Y.LT. 54) IDAY=54		JANT	20
IDAY1 = I DA Y1 + 1		JANT	23
CO 20 1=1.675		THAL	€2
11=I+ILAY2		JANT	
TH(II.GT.IUAYP) II = IDAY1		JANT	84
AP(I)=MGFLUX(II)		JANT	85
CFLx(I)=SFLUX(I1) *1 . 0E-1	-	JANT	66
YAGI+I=\$I		THAL	27
IF(12.GT. IL AY1) 12=10AY1		JANT	88
11=12-54		TVAL	89
AVFLX(1)=(.000		THAL	50
co 15 J=11+12		JANT	91
15 AVELX(1)=AVELX(1)+SELUX(J)		JANT	92
20 AVELX(I)=/VELX(I)/550.00	-	THAL	93
RETURN		JANT	94
END .		37.11	, .

NAME	MULMAT
PURPOSE	TO MULTIPLY THREE 3X3 MATRICES
CALLING SEQUENCE	CALL MULMAT(X.X1.X2.X3)
SYMBOL TYPE .	DESCRIPTION
X1 DP (3.3)	INPUT - MATRIX OF DIMENSION 3X3
X2 DP (3,3)	INPUT - MATRIX OF CIMENSION 3X3
)3 DP (3,3)	INPUT - MATRIX OF DIMENSION 3X3
X CP	CUTPUT - PRODUCT OF THE THEEL 3X3 MATRICES
SUBROUTINES USED	NONE
COMMON BLOCKS	ириз
INPUT FILES	NCHE
OUTHUT FILES	NONE

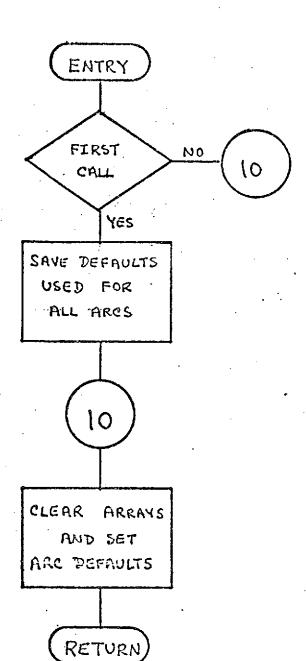
	SUBROLTINE MULMAT(X.X1.X2.X3)	·	MULM	32
	.REAL *3 >(3,3) +X1(3,3) +X2(3,3) +X3(3,3)	I +SUM .	MULM	33
	DO 40 J=1+3		MULM	34
	DO 16 I=1+3		M ULM	25
10	X('I+J)=C+DG		MULM	3€
	DO 46 K=1+3		· 4ULM	37
	SUM=C.DC	•	NULM	3.8
	DO 20 L=1.3		MULY	30
20	\$UM=\$UM+X2(K+L) *X3(L+J)		MULM	4¢
	DO 4C 1=1.3	•	MULM	41
40)(I,J)=>(I,J)+SUM*X1(1,K)	• .	MULM	42
	RETURN		. MULM	43
	END	· .	MULM	44

NAME	NE WARC		,	-	<i>4</i> ••
PURPOSE	TO INITI	ALIZE SWITC	HES AND C	CNSTANTS FOR	EACH ARC
CALLING SEQUENCE	CALL NEW	ARC		•	
SUBROUTINES LEFT	CLEAR		•	•	
COMMON BLOCKS	APARAN FLXSLK PRIORI	CELEM FNOLEL TPERLK	CGEOS INITEK VRELOK	CONST'S INTPLK	CTIME
INPUT FILES	NCNE		· · · · · · · · · · · · · · · · · · ·		
OUTPUT FILES	NCNE	•			

SUBROUTINE NE WARC	NEWA	20
IMPLICIT REAL XE (A-H+O-Z)	MEWA	2!
LOGICAL NOTIST. TOREFT	MEMA	22
IN TREEF XYZ TP (F VTP (SCRA (SCRC) FUTF) PLOTP (DATP) CUTP (ZSTSTA) GROTP	MEMA	23
RCAL RMSTOT. VARCOV. TO ITN	NEWA	24
. DOUBLE PRECISION MODEL.LOVE	NEWA	25
DIMENSION SPOOY(6)+SSTEP(20)	NEWA	26
TO COMMONZAPAR AMZENDAR FENDARE FNEEDS FEST STEAFNS AT TRINGPARCENUR ECTENDÀR AM	LONDWA	27
• NEBIAS (MAXPAR)	NEWA	28
COMMONZELE MZELE MST (24) .XNU.FC.FRST CT	NEWA	29
COMMONZOGID SZI SATID (252) INCPERF (203)	4 5 W A	35
COMMINICONSISZOPI (DINGPI (CRAD) DESEC	ALMV	31
COMMONZCTIMIZOR TAMP(3) *DAYSTF * DAYINT * LOFBIT * CAYEND * CFATE * DOFB1 *	AE KV	32
• DORBIL(2)•IY	NEWA	33
COMMONZEL XELKZI STOFE (450,9)	NEWA	34
COMMONIF MEDIELVI NDEXI + NDEXI + I NDE XII + NDEX4 + CS (EG. 33) + MODELL(8)	AWBY	35
COMMONALNI TEKNI SI (57)	AWEVA	36
COMMON/INTRLK/THDCT1.THGCT2.THGT25.1G2(50).FGC1F5(6).STEPSZ(24).	NEWA	37
URON(8),ECVE(3),TORIFT,NEGEY	VEWA	3.9
COMMON/PREBLK/DAYSTA.JGBS(15)	NEWA	39
COMMONZERIURIZELEMIN(12).VARCOV(6.5.2).TITEE(30).ORAG(18)	NEWA	40
COMMO NATRIBLKAI NTP (OUTP (DATP)XY ZTP) KE FT AP, RVT P, FLOTP, IOBS, SCRA.	NEWA	41
SCRC .FLTF.GROTE	NEWA	42
COMMONZVAELCKZUSTORF (450 +5)	MEWA	43
COLIVALENCE (EDITA-1G1(33))	NEWA	44
DATA NOTESTA-FALSE.	NEWA:	45
20 ITN=3.5	MENA	. 46
CALL CLEAP(IG1(34)+24+1)	AWRW	47
1F(N)T1ST) GO TO 20	A ## WA	48
SAVE DEFAULT CONSTANTS USED FOR ALL AFCS	M C WA	4Ç
NO 11 STE • TRUE.	MEMA	50
INDS1=1ACUX1	AWEWA	51
INDS3=FKCL X3	MEMA	52
NaCD YS=NCCC Y	NEWA	53
DO 5 1=1.€	A#I3#A	54
5 (BC)Y(1)=BCDITS(1)	AERA	\$5
5 \$807Y(1)=807ITS(I)	AEAN	\$5

¢

THOUT1 = THOOT1 #D RAD			NEHA	-56 ,
THOOT2=THOOT1+OTWOPI			NEWA	57
THCT2S=TI-DOT2/8.6404			NEWA	`∉e
DO 10 I=1.20			NEHA	59
C CLEAR ARRAYS AND SET ARC DEFAULTS			· VEWA	60
10 55109(1)=510952(1)			NEWA	61
20 00 25 1=1,20	•		NEWA	
25 STEP SZ(I) = S STEP (I)			NEWA	
NBOD YENBODYS			VEWA	
DO 26 I=1.6	•	•	NEWA	
26 BODI(S(I)=SHODY(I)	•		AE.AV	
CALL CLEAR(NEGN.8.1)			VEWA	
TORCFI - FALSE			NEWA	
DFATE=959.000			NEWA	-
DORRIT=C.COC			NEWA	-
O CO . CO CO			NEWA	
* DAYSTA=\$99.000		•	NEWA	
DA 1512=599. CC 0	•		VEMY	
DDRG1=+1.00 C	•		NEWA	
EMSTOT=20C.	•		NEWA	•
			NEWA	
CALL CLEAR(VARCOV+84+2) CALL CLEAR(ISTORE+450+9)	•		NEWA	
	• *			
CALL CLEAR(JSTORE ,450 .5)			NEWA	
00 30 1=1.6	,		NEWA	
VARCOV(I.I.1) =1.00+14	•		NEWA	
30 VARCOV(I.I.2) =1.00+14			NEWA	
INPAR=3			NE.WA	
· ····································			YENA	
NPAPA 4 = C			AWBV	
NEBIA S= C			NEWA	
MA >PAR=C			VEWA	
NBIA S=0			MEMA	
INPARI = C			MEWA	
DRAG(17)=1.500			NEWA	
DRAG(18)=1.500	•		MEMY	
CALL CLEAR(NOPERRADAI)			A L'AV	
INDEXI=INDSI		'	A E. WA	
INDEX3=INDS3	•		NEWA	93
Kr PTAP=S			NEWA	54
NOREC1=C			NEWA	95
· NGPARC = SUC			AEWA	. 56
NSAT=1	t		NEWA	
10BS=20	• .		VEWA	. 5 8
XYZTP=8			イだめな	59
E V 1P = 0	•		4 E MY	100
RE TURN			VEWA	1,01
END			AEMA	102
•				



NEWARC Page 3 of 3 October 1972

35 35 37

38

4°C

41

42

43

44

45

NUMB

NUAB

NUMB

NUMB

NUVE

8 vu P

RNUR

NUMB

NAME	NUMBR2
PURPOSE	TO SEARCH AN ARRAY TO DETERMINE IF THE ARRAY CONTAINS AN ENTRY WHICH MATCHES GIVEN OUTPUT NUMBER IF FOUND THE INDEX NUMBER OF LOCATION IN THE ARRAY "IA" IS RETURNED. C IS FETUENED IF NO WATCH IS FOUND
CALLING SEQUEN	CE X=NUMBR2(K:IA:ID)
SYMBOL TYP	E DESCRIPTION
K I	INPUT - NUMBER OR EIT CONFICURATION TO BE LOCATED IN ARRAY
IA I*2	INPUT - ARRAY TO EE SEAFCHED
10 1	INPUT - NUMBER OF ENTRIES IN ARRAY "IA"
NUMER 2 I	CUTPUT - THE NUMBER OF ENTRY THAT MATCHEE THE GIVEN INFUT NUMBER
SUBROUTINES US	ED NONE
COMMON BLOCKS	NCNE
INPUT FILES	
OUTPUT FILES	NONE
INTEGER F	NCTION NUMBR2 (K+IA+ID)
INTEGER #2	I A(ID) NU/8
110000000000000000000000000000000000000	ALL ALL ALL ALL ALL ALL ALL ALL ALL ALL

IF (ID.LT.1) RETURN

1F(K.EQ.IA(1)) GO TC 20

LO 10 I=1.1E

10 CONTINUE

20 NLM5R2=I

END

BE TURN

RETURN

NAME	NUMBR4
PURPOSE	TO SEARCH AN AFRAY TO DETERMINE IF THE AFRAY CONTAINS AN ENTRY WHICH MATCHES A GIVEN INFUT NUMBER OR LOCATION IN THE ARRAY 'IA' IS FETURNED. O IS FITURNED IF NO MATCH IS FOUND
CALLING SECURNCE	NUMBR4 (K.IA.ID)
SYMBOL TYPE	DESCRIPTION
I	INPUT - NUMBER OR EIT CONFIGURATION TO BE LICATED IN "IA" ARFAY
IA I (1D)	INPUT - ARRAY TO BE SEAFCHED
10 1	INPUT - NUMBER OF ENTRIES IN TIAT AREAY.
NUMBR 4 I	OUTPUT - INDEX NUMBER OF THE MEMBER OF *IA* ARRAY WHICH CONTAINS THE ENTRY WHICH MATCHES K
SUBROUTINES USED	NCNE
COMMON BLOCKS	NCNE
INPUT FILES	NCNE
SEJIÀ TURTUO	NCNE

INTEGER FUNCTION NUMBRA(K.IA.IC)
INTEGER #4 IA(ID)
NUMBR4=C
IF(IM.L1.1) RETURN
DD 10 I=1.ID
IF(K.C0.IA(I)) GC TC 20
10 CONTINUE
RETURN
20 NUMBR4=I
PETURN
END

NUMB 35 A NAU 36 NUMB 37 NUMB 38 NUMB 36 NUMB 40 NUVB 41 EMU P 42 N UMB 43 NUMB 44 NUMB 45

NAHS		NUNLOC
PURPOSE		TO SEARCH AN ARRAY TO DETERMINE IF THE APRAY CONTAINS ENTRIES WHICH MATCH GIVEN INPUT NUMBER. IF FOUND THE INDEX NUMBERS OF LOCATIONS IN THE ARRAY "IA" AND THE NUMBER OF SUCH MATCHING ENTRIES FOUND APE RETURNED.
SYMBOL	1YFE	DESCRIPTION
NO	1	INPUT - NUMBER OR EIT CENFIGURATION TO BE LOCATED IN ARRAY
1A (1)	2 * 1	INPUT - ARPAY, TO FE SEAFCHED
NT	I	INPUT - NUMBER OF ENTRIES IN 'IA' ARRAY
LOC (1)	1 *2	OUTPUT - THE INDEX NUMBERS OF THE MEMBERS OF *IA* ARRAY WHICH MATCH *NO!
NUMLOC	1	OUTPUT - THE NUMBER OF ENTRIES THAT MATCH THE GIVEN INFUT NUMBER
SUBROLTINE	S USED	NUMBR2
COMMON PLD	CKS	NCNE
INPLT FILE	s	REPRODUCIBILITY OF THE
SUTPLT FIL	E 5	ORIGINAL PAGE IS POOR

	INTEGER FUNCTION NUMBER (NO.1A.NT.LOC)						NUML	3€
	INTEGER #2 LCC(1) (IA(1)			•			N UML	39
	NUMLOC = C						NUML	40
	11=NU3BP2(NC+14+NT)		•		:		N UML	43
-	IF(I1.EG.C) RETURN						NUML	42
	N2=NT-I1					•	NUML	43
	NUNLOC=1				-		NUML	44
	LOC(1)=11					·	NUAL	45
	DD 20 I=1.NT	••					NUML	46
	J1=L00(NUNLCC)+1						NUML	47
	11=NLY3F2(NC+IA(J1)+N2)						NUML	49
	IF(I1.80.C) BUTURN						NUML	49
	NUMBER NUMBER +1					-	NUME	50
•	LOC(NUMLOC) =11+ J1-1				•	•	4 UML	51
2.2	N2=N2+I1						NUVL	52
20	RETURN				•		NUML	5.3
	END						N UML	54
	END		•					

NUTATE

DESCRIPTION

Subroutine NUTATE generates the rotation matrix to nutate a vector from true to mean equator and equinox of date.

EQN is invoked to compute the nutation in longitude, the nutation in obliquity; and the true obliquity of the ecliptic. The rotation matrices are constructed by ROTMAT; MULMAT evaluates the output rotation matrix as a product of the three input rotation matrices.

NAME		NUTATE				
PURPOSE					TO TRANSFORM MEAN EQUATOR	
CALLING SEQ	LENCE .	CALL NUT	ATE(DAY (X)			• •
SYMBOL	TYPE	DESCRIPT	ION '	•	•	
DAY	OP.	INPUT -	TIME FOR AN	GL E.S	•	•
(3•3) X	ĎР	OUTPUT -	NUTATION .	ATRIX		,
SUBROUTINES	dasu" a	ROTMAT	MULMAT	ECN	YADAY	
COMPON BLOC	: K 5	INITBK	• •			•
INPUT FILES	5	NONE		, .	•	
OUTPUT FILE	.	NO NE		•		
REFERENCES		•	SYSTEMS CES - GEOCYN D	· •		

	SUBROUTINE NUTATE (DAY . X)	NUTA	30
	YADMY * PRECISION DAY * X (3 . 3) * DEBE * DE LPSI * DJ * DFPS * EPS * YADMY	NUTA	31
	REAL*3 >1(3:3).X2(3:3).X2(3:3)	ATUP	32
	COMMON/INITEK/IG1(52).NCT1ST.IG2(4)	ATUP	33
	LOGICAL NOTIST	ATUV	34
	IF(NUT15T) GO TO 10	ATUP	35
	DJBA 52=2433231.500-YMDAY(500100.0.0.00)	ATU!	36
	NOTIST=.TRUA.	ATUP	37
10	CONTRACTOR OF THE CHILD	ATUP	38
	G=EGN(DJ+OMLPSI+DDPS+EPS)	ATU P	39
	CALL ROTMAT(EPS:1:X1)	ATU R	40
	CALL ROIMAT(+CFLPSI +3 +X2)	ATU P	41
	CALL ROTMAT(-EPS+DEPS+1 +X3)	NUTA	42
	CALL MULMAT(X+X3+X2+X1)	NUTA	43
	RETURN	N UTA	44
	END	NUTA	45

OBSDOT

DESCRIPTION

Subroutine OBSDOT calculates the time derivatives of the computed observations. The measurement types implemented are:

- 1. Right ascension and declination
- 2. Range
- 3. Range Rate
- 4. Not used
- 5. L and m direction cosines
- 6. X and Y angles
- 7 Azimuth and elevation

Note that the functions XEFIX and YEFIX are treated as transformations. When applied to the velocity vector, the output of these transformations differs from the Earth fixed velocity by a term involving the rotation rate of the Earth.

NAME

DUSDOT

ENTRY FOINT

PURPOSE

DB SOT 1

INITIALIZATION

08 \$00 T

. TO CALCULATE THE TIME DERIVATIVES OF COMPUTED **CBSERVATIONS**

CALLING SEQUENCE DESDT1 (EHAT , NHAT , ZHAT)

SYMBOL TYPE DUSCRIPTION

EHA T.

INPUT - STATION UNIT LAST VECTOR

(2.1)

NHAT . DP

INPUT - STATICH UNIT, NORTH VECTOR

(3,1)

ZHAT OP. INPUT - STATICH UNIT VEFTICAL VECTOR

(2.1)

CALLING SECUENCE CRSDOT(MTYPE-ISTA+CBSCT2)

SYMEDL TYPE DESCRIPTION

MITTPE

"INFUL - "MEASUREMENT TYPE

ATRI

INPUT - INTERNAL STATION NUMBER

CRSDT2 - DP

OUTPUT - TIME CORIVATIVE OF SECOND MEASUREMENT

CBSCOT DP

CUTFUT - TIME CERIVATIVE OF FIRST MEASUREMENT

SUBFOUTINES USED

DCTPRD

XEFIX

COMMON BLOCKS

CUVECT

YSEIX

INTELK

PREPLK

XY ZOUT

INPUT FILES

NCNE

OUTPUT FILES

NC NE.

RESTRICTIONS

COMPUTE THE TIME DEFIVATIVES OF MEASUREMENT TYPES: RIGHT ASCENSION AND DECLINATION, PANCE, PANCE RATEL L AND M DIFFECTION COSINES, X AND Y ANGLES. AZI MUTH AND BLEVATION

REFERENCES

GEODYN SYSTEMS (ESCRIPTION

VOLUME 1 - GEORYN ECCUMENTATION REPRODUCIBILITY OF THE ORIGINAL PAGE IS POOR

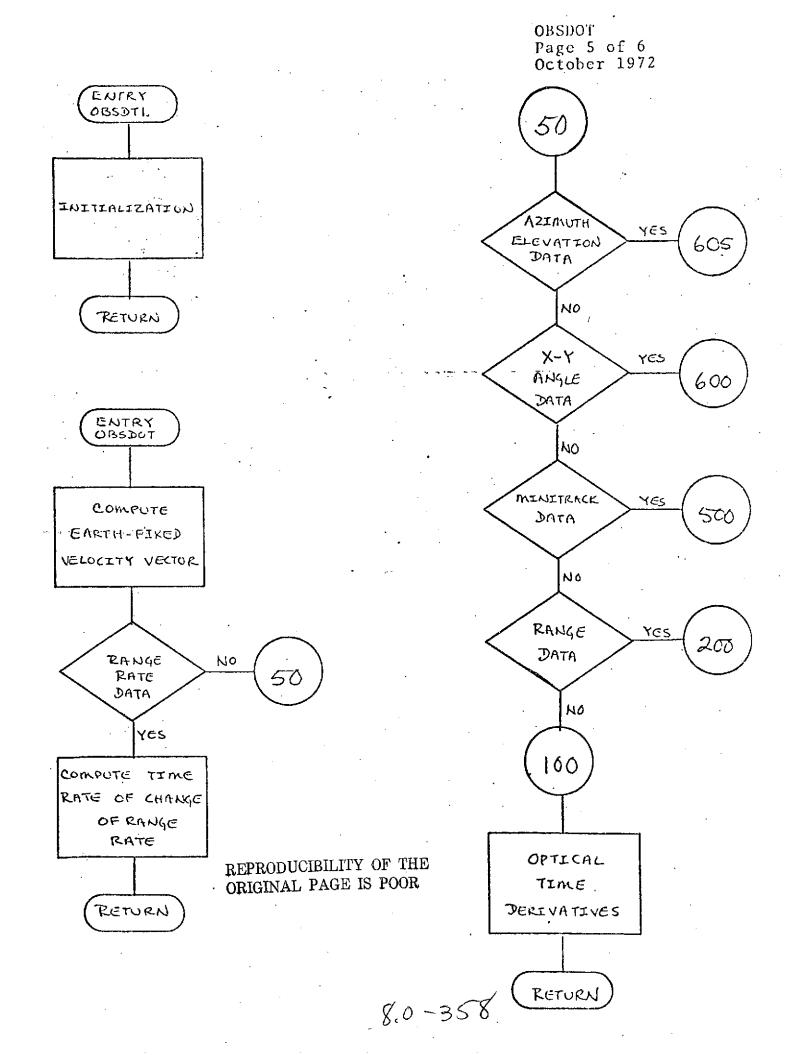
DOWNE PRECISION FUNCTION OBSETT(EHAT, NAT, ZHAT) IMPLICIT REALAU (A-H.C-Z)

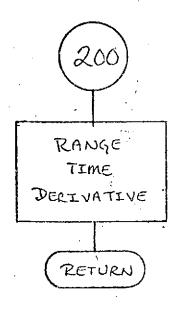
2950 53

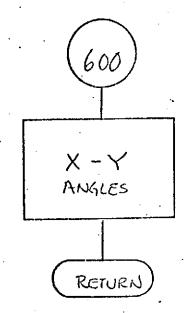
55

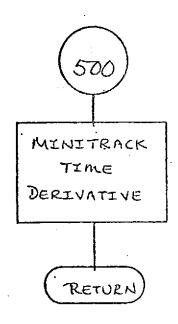
```
9889
                                                                                            56
      INTEGER #2 I SAT PRETYP
                                                                                    DBSD
                                                                                            57
      DOUBLE PRICISION NHAT
                                                                                            Eρ
                                                                                    20.50
      DIMENSION WHAT(3:1):NHAT(3:1):ZHAT(3:1):DELFOT(3):DELFOT(3)
      COMMONICOVE CT/UHAT(3:2) (XYZ(3:2) (6XYZ(3:2)) (5LNV(3:0)) (2) (2) (2) (2)
                                                                                            E 7
                                                                                    7 77 57
                                                                                            60
          XY50 (21
                                                                                    2952
                                                                                            61
      COPMONATO TELEVITHE TG D (2) THE T2S & GM AND (62)
                                                                                    DR SD
                                                                                            62
       COMMON/FELE LK/DAYSTA(7) . ISAT . PRETYP(5)
                                                                                    38 SD
                                                                                            63
      COMMON/XYZOUT/XYZI(6:4)
                                                                                    98.50
                                                                                            64
      RETURN
      ENTRY DBS(OT(MTYPF (ISTA, CRSDT2)
                                                                                            65
                                                                                    DRSD
C CALCULATE SATELLITE ZARTH-FIXED VELECITY VECTOR
                                                                                    DESD
                                                                                            66
                                                                                            67
                                                                                     3850
       DRISDITE= C+CC C
                                                                                     20.00
                                                                                            68
       OB SUDITE C. CC C
                                                                                     DBSD
                                                                                            69
       IF(MTYPE.GT.7) FETURN
                                                                                            70
       DELCOT(1) = XEF1X(XYZI(4.ISAT).XYZI(5.ISAT))
                                                                                     DESD
                                                                                            71
       DFLOOT(2)=Y(FIX(XYZI(4+ISAT)+XYZI(5+ISAT))
                                                                                     3880
                                                                                            72
                                                                                    3880
       DELDOT(S)=XYZI(6,ISAT)
                                                                                     3850
                                                                                            73
       IF (MIYPE.NO.3) GO TO 59
                                                                                     2850
                                                                                            74
C COMPUTE TIME RATE OF CHANGE OF ...
                                                                                     385h
                                                                                            75
C
                                                                                     1850
                                                                                            75
 ***FANGE RATE
                                                                                            77
                                                                                     18 SC
       R1 SQ = DC TPFD (XYZI(1, | SAT), XYZI(1, IS AT))
                                                                                            78
                                                                                     0.850
       R1=0 506 1(61 50)
                                                                                     39.50
                                                                                            79
       C4=GM/(F) 50*P1)
                                                                                            80
                                                                                     0380
       C=5.(D(*()YZ1(3,1SAT)/A1)**2-1.000
                                                                                     3850
                                                                                            61
       C2=C-2.00 C
       C3=6+506455497R15Q
                                                                                     DP-CO
                                                                                            F. 2
                                                                                     2880
                                                                                            27
       c 11,000c=0+031+04
                                                                                     3652
                                                                                            64
       DE LCD T(1) == C #XYZ(1 .ISAT) +THC T2S #C: LCOT (2)
                                                                                            £ 5
       Palow T(2) =~C *XYZ(2, ISAT) -THOTPS * E. LOOT (1)
                                                                                     36.50
                                                                                     DRSD
                                                                                            £c
       DLLDDT(3)=-(1.000-C2+C3)*C4*XYZI(3,18AT)
                                                                                            67
       DELOGIT(1) =LELOCIT(1) + THOT25 *XYZ(2:15/T)
                                                                                     2050
       OFLOOT(2) =CLEGOT(2) - THOT25#XYZ(1:ISAT)
                                                                                     3050
                                                                                            FR
                                                                                            23
                                                                                     345¢
       *DELDU T( 1) =0.0 LODET(1) + THUT2S #85 LECT(2)
                                                                                            90
       Dalber(2)=Dalber(2)-THDT2S#6FLBGT(1)
                                                                                     3555
                                                                                     つわらつ
                                                                                            S 1
       PROTERO TPHO (DELOGT, UHAT (1, ISAT))
       DE SOOT=COTPED (DELDGT, CELDGT) /8 (ISAT) + COTPEC (UHAT (I: ISAT) + CELDGT)
                                                                                     DESC
                                                                                            52
                                                                                            93
                                                                                     DP 50
          -REOT##2 /R (I SAT)
                                                                                     DOSD
                                                                                            54
      FE TUEN
    50.00000T(1) =DREDCT(1) + THOT25 =XYZ(2,15AT)
                                                                                     DESD
                                                                                            ÇĘ
       OPEDOT(2)=DULCOT(2) - THO T25 #XYZ(1,19 AT )
                                                                                             Ģ¢.
                                                                                     3853
                                                                                            57
                                                                                     3655
       RECT=DOIPED (DELECT. LHAT (1.ISAT))
       GO TO(100,200,700,700,500,600,600,605) +MTYP"
                                                                                            Çē
                                                                                     2 9 SD
                                                                                             90
  ...DPTICAL
                                                                                     DESD
                                                                                     3885
                                                                                           155
   100 C=1. (L U-LHAT(3.15AT) **2
       DESC T2=( XYZ 1 ( 6 .1 SAT ) - UHAT (3 .1 SAT ) 4-50T ) / (F ( 15 AT ) 4 CS 05T ( C ) )
                                                                                           10:
       DE SCIDIT# (UHAIT(1,1SAT) #CLIEDIT(2) - UHAT (2,1SAT) #CSLIEDIT(1))/(P(ISAT) #C)DIRSD
                                                                                           102
       ALL TUSIN
                                                                                     3 = SC
                                                                                           103
                                                                                     0.850
                                                                                           100
  ...RANGY
                                                                                           105
   200 CD STOT#RDCT
                                                                                     3250
                                                                                     JPSP.
                                                                                           106
       F! TUFN
  ...MINITERCK
                                                                                     D 74 S.C.
                                                                                           1(7
   500 08 STOT= (DOTFO) (CLUDOT & HAT (1 - ISTA) ) - SPNV (1 - ISAT ) 4 - DOT JAP ( ISAT )
                                                                                     3 P SN
                                                                                           1.05
       DD 20173= (CCTPFU(CLECOT.NHZT(L.ISTZ)))-RONV(2.ISZT)%FUOT)Z F (ISAT)
                                                                                     29.80
                                                                                           1.5
       RL TUF 1
                                                                                     DESC 110
  AMBLES Y AMBLES
                                                                                      2020
```

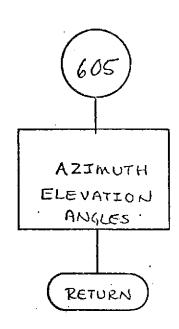
:	600 C=1.02C-FENV(2:ISAT) ++2	วอธรา	112
	OF SDOT= (MENV(3,1SAT) *DOTPRD(DELECT; HAT (1, ISTA)) + FENV(1, ISAT)*	0 B Sh	112
	. LOTPED (DELDOT, ZHAT(1 , ISTA))) / (C*F(ISAT))	385 0	114
	OBST72=(COTFFD(CTLDCT,NHAT(1,ISTA))-RCOT#RFNV(2,ISAT))/R(ISAT)	3.650	115
	D SQF 1(C))	D850	116
•	RETUEN	วธรอ	117
_	***AZIMUTH AND ELEVATION	o e šn	118
_	605,C=1.60C+R:INV(3.1SAT) **2	วอรา	110
	OR SUDT# (RENV(2.1 SAT) **OTPRO(U: LOCT. CHAT (1. IST.)) PENV(1. IST.)*	D B 50	120
	* DOTESO(DELOGTANHAT(1.ISTA)))/(C*F(ISAT))	กลรอ	121
	' 'OB SO TO = (D OTERO (DCLUCT , ZHAT (1 \ISTA)) + F CCT # K (NV (3 + 15 AT)) / (F (15AT) #	D 8 50	122
	D SOR T(C))	DE SD	123
	7CC RETURN	Desc	124
	END .	DRSD	125









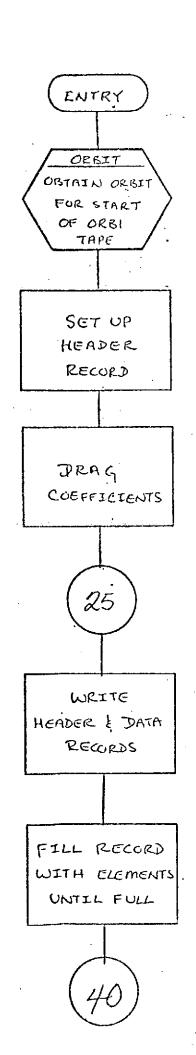


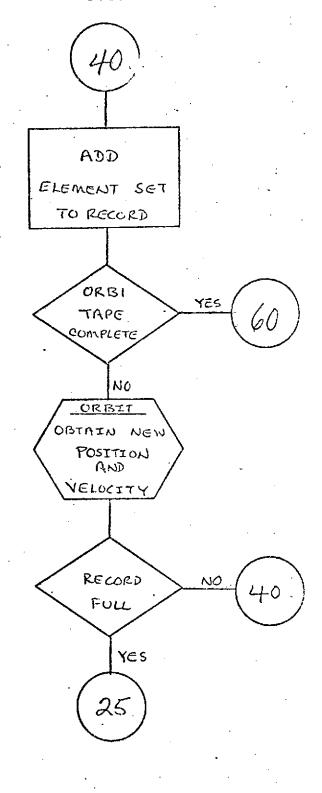
NAME	ORB1				
PURPOSE	TO GENERAT	4	(те ернемеі	RIS TAPE IN	CRB1
CALLING SEQUENCE	CALL ORBIG	0R51 RT1			
SYMPOL TYPE	DESCRIPTIO		•		•
CREIRT, DP	. INPUT CF	TAPA CUI	FATE TUR	IN INTL.GRAL	SECONDS
SUBROUTINES USED	OSBIT ECN	DAYEAR	ELEM DCT PRD	DAT ES	FRROR
COMMON BLOCKS	CCNSTS INTBLK	FMODIL PRICKI	CELEM XYZOUT	CGEOS CT 1ME	CORP1
INPUT FILES	NONE	•		•	
OUTPUT FILES	22 - CR81	FILE			
REFERENCE		CORAN OFER) XICH3 994

	•		_
	SUBROUTINE DRBI(CRBIAT)	JF91	28
	COMMON/CHIME/CATATR(2).DAYFEF. DSTAFT. DAYSTR(16). DORBI. DOFBIE.	3831	29
	ORUR 1(2) (1 Y8/16)	30
•	REAL*8 ELEMIN, CE, CDD, EMISS, SEC -	0681	31
	CDMMUN/CCNSTS/DPI DTWCPI CFAD DESEC (2)	JP31	32
	PEAL*3 MODIL.CS	3 FB1	33
	COMMON/FMCDEL/INDEX1. NOLX2.INDEX3.INDEX4.C5(30.33).MGDFL(8)	JP81	24
	PEAL*8 DEGPAR IMMUUNIMSUNIASATIMSAT	3891·	25
	REAL #3 BUF(350) (LBUF(6,50) (DCRE1 (LCR81) (CRE1FT(XYZEND, DOTPED)	3F31	36
	DAYRET . THE TGC . THE GT1 . EQN . CUUL. G1 . G2 . CREELA . FLEMST . AE . GM .	ე - 31	37
	DPI OT WOPE OF AD VAS OF STAFT ODAYS EF OF CHARACTER OF SO APHIL PEPHIL	J##1	36
	RANDCT, PLROOT, THOTES, G3	DEBI	39.
	COMMONICE LEWIELEMST (12) + CRHELA (12) + XNU+ EC+ FMSTOT	DF31	40
	COMMUNICGEDS/ISATID+G4(454)	2881	41
	(2) TREATMENT (2) THE SECT (2) TRUET (2) TO CARRY FROUNDWAD.	DPB1	42
	COMMUNINTELKITHOCT1 .THOCT2 (2) .THEFES .GM. AL. ALSO(44) .THEFED.	JP21	43
	MMTON . MSUN . MSGOY (44) . ASAT (2) . MS / T (2) . V AFST P (20)	DAR1	44
	COMMON/PRIOFIXELE MIN(02) (CD(2), CDF(2), FMISS(2)	JR91	45
	COMMONULYYZOUTUXYZONO(12) (DRGFAP(12)	DPB1	.4€
	REAL 48 NINES/599999999007	1890	47
	INTEGRA TORSI VSSV (NFILES/C/	3P21	48
	EQUIVALENCE (BUF(6). TBUF(1.1))	OFDI	45
c nat/	AIN DRAIT FOR HIGINNING OF ORFL TAPL	DF91	50
	CALL DEBIT(COSBI)	J 6 6 1	51
C 51.1	LEP HISBER PROJECT	ግቦጓዜ	52
	ED 10 1=1.350	3 831	53
16	BUF(I)=C+30	3 881	54
	REPRODUCIBILITY OF THE	2531	55
t			
•	ORIGINAL PAGE IS POOR		

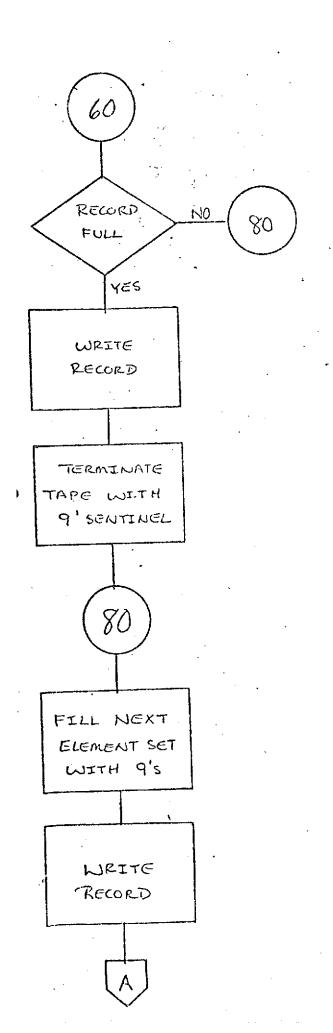
DUF(2)=ISATID CALL DAYEAR(FORBI-1)YMD-1DAY, ISEC) DUF(4)=IYMD BUF(6)=ICAY DUF(6)=IEC CALL DAYEAR(DORBIE-1, YMD-1DAY, ISEC) DUF(7)=IEC CALL DAYEAR(DORBIE-1, YMD-1DAY, ISEC) DUF(3)=ISEC DUF(3)=ISEC DT=IDIAY(CREET RT*86460.00+.5D0) DUF(5)=ISEC DT=IDIAY(CREET RT*86460.00+.5D0) DUF(5)=ISEC DT=IDIAY(CREET RT*86460.00+.5D0) DUF(1)=ITEC DUF(1)=ITEC CALL DAYEAR(DAYEEF-1, YMD-1DAYISEC) DUF(1)=ITEC BUF(27)=IYMD BUF(28)=IGAY DUF(28)=IGAY DU	57 8 9 0 1 2 3 4 5 6 7 8 9 0
CALL DAYEAR (CHEST TYPOTISATISEC) DREST	58 59 60 61 62 63 64 65 66 67 68 69
BUFF(E)=TICAY SPRI	59 60 61 62 63 64 65 66 67 68 69
BUT(6)=199C BUT(6)=199C CALL DAYEAR (DGRRIE, IYMD, IDAY, ISEC) BUT(7)=1YMD BUT(8)=1SEC DT=1DINI (CREI HT *86460.00+.500) BUT(1))=CT CALL DAYEAR (DAYFEF, IYMD, IDAY, ISEC) BUT(1))=CT CALL DAYEAR (DAYFEF, IYMD, IDAY, ISEC) BUT(27)=1YMD BUT(28)=1EAY BUT(28)=1EAY BUT(28)=1EAY BUT(28)=1EAY BUT(28)=1EAY BUT(28)=1EAY BUT(33)=-1.500*CS(2.1)*CUU**2 BUT(33)=-2.500*CS(3.1)*CUU**2 BUT(33)=-2.500*CS(3.1)*CUU**2 BUT(33)=-2.500*CS(3.1)*CUU**3 BUT(33)=-2.500*CS(4.1)*CUU**3 CUI=CSORT(A(**3/GM) BUT(80)=CD(1) BUT(80)=CD(1) BUT(81)=ASAT(1)*1.004 BUT(81)=ASAT(1)*1.004 BUT(81)=ASAT(1)*1.005 BUT(80)=CD(1) BUT(101)=(DSTATT-CAYFEF)**8CA60.00/CUT BUT(101)=(DSTATT-CAYFEF)**8CA60.00/CUT BUT(101)=CBBUA(1)/CUU BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(101)=CBBUA(1)/CUU DAB1 BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) DAB1 BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105))) BUT(111)=CBGT(CCTPAC(BUT(105), EUF(105)))	69 61 62 63 64 65 66 67 68 69
BUT(6)=1885 CALL DAYMAR (DORRIE (1YMD)(1DAY)(1SEC) DRB1 BUF(7)=1YMD DPB1 BUF(8)=1855 DPB1 D	61 62 63 64 65 66 67 68 69
### CALL DATE AR (ODER 1 17 NO 11 DAY 11 DAY 1 15 C) ### BUF(?) = 11 YO ### DUF(?) = 1 SC ### DUF(?) = 1 SC ### DUF(?) = 1 SC ### DUF(?) = 1 SC ### DUF(?) = 1 SC ### DUF(?) = 1 SC ### DUF(?) = 1 YMC ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D1 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+1 D2 NT (DAYREF) *THDCT1 + UON (DJUL (DAYREF), G1, G2, G3) ### DUF(?) = 1 THE TG O+	62 63 64 65 66 67 68
BUF(8)=10AY DUF(9)=15EC DT=101N1(CRETRT*864C0.00+.5D0) BUF(1))=0T CALL DAYEAR(DAYPEF.IYMD.1DAY.1SEC) BUF(27)=1YMD BUF(28)=1CAY DUF(29)=THE TG0+1D1NT(DAYREF)*THDCT1+E0N(DJUL(EAYPEF),G1.G2.G3) DF81 CUL=AE BUF(37)=-1.5D0*CS(2.1)*CUL**2 BUF(37)=-1.5D0*CS(2.1)*CUL**2 BUF(39)=43.75D0*CS(4.1)*CUL**3 BUF(39)=43.75D0*CS(4.1)*CUL**4 DF91 BUF(40)=+1.(C*CS(5.1)*CUL**4 DF91 BUF(40)=CD(1) BUF(60)=CD(1) BUF(60)=CD(1) BUF(60)=CD(1) BUF(61)=ASAT(1)*1.004 BUF(61)=ASAT(1)*1.003 DF81	63, 64 65, 66 67 68 69
BUF(9) = 1 SEC DT = 10 INT(CRU RT *864 CO.DO+*SDO) BUF(1) = CT CALL DAYEAR (DAYPEF, 1YMD*IDAY*, ISEC) BUF(27) = 1 YMC BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(28) = 1 CAY BUF(37) = -1 CD O*CS(2 *1) *CUL**2 BUF(38) = -2 CDO*CS(2 *1) *CUL**2 BUF(38) = -2 CDO*CS(4 *1) *CUL**4 BUF(38) = -3 7 SDO*CS(4 *1) *CUL**4 BUF(39) = -4 3 7 SDO*CS(4 *1) *CUL**4 BUF(40) = +1 CC*CS(5 *1) *CUL**4 BUF(40) = +1 CC*CS(5 *1) *CUL**4 BUF(20) = CD(1) BUF(20) = CD(1) BUF(20) = CD(1) BUF(21) = MSA T(1) *1 .OOA DF81 BUF(22) = MSA T(1) *1 .OOA DF81 BUF(21) = MSA T(1) *1 .OOA DF81 BUF(101) = (0 STAF T + CAYREF) *864 GO*COVCOT DC CALL *(LEM(CLM*T, CROBAL*, 1 * TRUT*) BUF(102) = CRBLLA (1) /CUL BUF(103) = CRBELA (1) /CUL DC ST 1 = 1.6 DC ST 1	64 65 66 67 68 69
DUF(\$)=152C DT=IDINIT(CRELET**864C0.DO+*5D0) BUF(1))=CT CALL DA*CAR(DAYREF*IYMD*IDAY**ISEC) BUF(27)=1YMD* BUF(28)=1LAY BUF(28)=THE TGO*IDINT(DAYREF)*THDCT1*EGN(DUUL(DAYREF)*G1*G2*G3) DFB1 BUF(38)=-1.5D0*CS(2*1)*CUUL**2 BUF(38)=-2.5D0*CS(3*1)*CUUL**2 BUF(38)=-2.5D0*CS(3*1)*CUUL**3 BUF(38)=-2.5D0*CS(3*1)*CUUL**3 BUF(38)=-2.5D0*CS(3*1)*CUUL**4 BUF(38)=-2.5D0*CS(3*1)*CUUL**5 CUT=D.SORT(AC**3/GM) BUF(40)=+1.5C0*CS(5*1)*CUUL**5 CUT=D.SORT(AC**3/GM) BUF(80)=CD(1) BUF(80)=CD(1) BUF(80)=CD(1) BUF(80)=CD(1) BUF(80)=CD(1) BUF(10)=(DSTAFT*DAYREF*)*BC4G0*DO*CUT BUF(101)=(DSTAFT*DAYREF*)*BC4G0*DO*CUT BUF(103)=CRBELA*(1)*CUUL BUF(103)=CRBELA*(1)*CUUL BUF(103)=CRBELA*(1)*CUUL DO 15 L=1.6	65 66 67 68 69
BUF(1) = CT	66 67 68 69
CALL DAYEAR (DAYPEF + 17MD + 1DAY + 1SEC) BUF(27) = 17ME BUF(28) = 1CAY BUF(29) = THE TGO+1D1NT (DAYREF) *THDCT1+EON(CJUL(CAYPEF), G1+G2+G3) DFB1 CUL=AE BUF(37) == 1.5D0*CS(2+1)*CUL**2 BUF(33) == 2.5D0*CS(3+1)*CUL**2 BUF(33) == 2.5D0*CS(4+1)*CUL**4 BUF(33) == 2.5D0*CS(4+1)*CUL**4 DFB1 BUF(36) == 1.5C0*CS(4+1)*CUL**5 CUT=CSORT(AC**37/GM) BUF(20) = CD(1) BUF(20) = CD(1) BUF(20) = CD(1) BUF(20) = MSAT(1)*1.004 BUF(20) = MSAT(1)*1.003 IF (MMDN.GT.G.SD0) BUF(91) = 1.000 CALL MCEM(CLMST.CABCLA+1.TRUT.) BUF(101) = (DSTAFT-CAYREF)*86460.CD/CUT BUF(103) = CRBLA(1)/CUL BUF(103) = CRBLA(1)/CUL DAB1 DO 15 L= 1.6 BUF(104) = EUFMCT(1)/CUL DAB1 DO 20 L= 4.6 DUF(110+1) = EUFMCT(1)/CUL DRB1 BUF(111) = CSGT(CCTPRC(BUF(105), EUF(105))) DFB1 BUF(112) = CSGT(CCTPRC(BUF(105), EUF(105))) DFB1 BUF(114) = CFFTLA(6)	ć7 €8 €9
### CALL DAYBEAR DAYBER (1780) 1581-1580 ### BUF(27) = 1780 ### BUF(28) = 164 ### BUF(29) = THE TGO+IDINT(DAYREF) *THECT1+EON(DUL(DAYREF), G1, G2, G3) ### DUF(27) == 1, 50 0*CS(2*1) *CUL**2 ### BUF(27) == 1, 50 0*CS(2*1) *CUL**3 ### BUF(33) == 2, 50 0*CS(3*1) *CUL**3 ### BUF(39) == 3, 750 0*CS(4*1) *CUL**4 ### BUF(39) == 43, 750 0*CS(4*1) *CUL**4 ### BUF(30) == 1, 1, C*CS(5*1) *CUL**5 ### BUF(40) == 1, C*CS(5*1) *CUL**5 ### BUF(40) == 1, 1, C*CS(5*1) *CUL**5 ### BUF(40) == 1, 1, C*CS(5*1) *CUL**5 ### BUF(40) == 1, 1, C*CS(5*1) *CUL**5 ### BUF(40) == 1, 1, C*CS(5*1) *CUL**5 ### BUF(40) == 1,	68 69
BUF(28) = ICAY BUF(29) = THE TGO+IDINT(DAYR3F) *THDCT1+EGN(DJUL(EAYREF), G1, G2, G3)	€9
BUF(28) = THE TGO+IDINT(DAYREF) *THDCT1+EGN(DJUL(DAYREF), G1, G2, G3) DUF(29) = THE TGO+IDINT(DAYREF) *THDCT1+EGN(DJUL(DAYREF), G1, G2, G3) DUF(37) == 1	
CUL = AB	
BLF(37) == 1.5D0*CS(2.1)*CUL**2 BLF(37) == 1.5D0*CS(3.1)*CUL**2 BLF(39) == 2.5D0*CS(3.1)*CUL**2 BLF(39) == 3.75D0*CS(4.1)*CUL**4 BLF(40) == 1.C(*CS(5.1)*CUL**5 CLT=LSORT(AC**3/GM) BLF(60) == CD(1) BLF(60) == CD(1) BLF(61) == ASAT(1)*1.004 BLF(62) == MSAT(1)*1.003 IF (MMJDN.GT.6.000) BUF(91) = 1.000 ORE1 IF (MSUN.GT.6.000) BUF(92) = 1.000 CALL BLEM(ELMST.GRBBLA.1TRUT.) BLF(101) == CSTAFT-CAYREF)*BC400.CO/CUT BUF(102) == CRBBLA(1)/CUL BUF(103) == CRBBLA(1)/CUL DO 15 [= 1.6 BUF(104+1) == ELEMST(1)/CUL DO 26 1 = 4.6 DU BUF(104+1) == CFBC(104+1)*CUT BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) DRB1 BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) DRB1 BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) DRB1 BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) DRB1 BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) DRB1 BUF(112) == CSCRT(BCTPAC(BUF(105).EUF(105))) DRB1 BUF(114) == CFEFLA(6)	71
#UF(33) == 2.50 U*CS(3.1) *CUL**3 #UF(34) == 2.50 U*CS(3.1) *CUL**4 #UF(34) == 43.75D0 *CS(4.1) *CUL**4 #UF(34) == 43.75D0 *CS(4.1) *CUL**4 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) U*CUL**5 #UF(34) == 1.00 U*CS(5.1) *CUL**5 #UF(34) == 1.00 U*CS(5.1) U*CS(72
BUF(39)=43,7500*CS(4*1)*CUL**4 BUF(39)=43,7500*CS(4*1)*CUL**5 CUT=1.50RT(AC**3/GM) BUF(80)=CD(1) BUF(81)=ASAT(1)*1*004 BUF(82)=MSAT(1)*1*003 IF (MMJON*GT**0*000) BUF(91)=1*000 CALL ELEM(ELL MST**CABBLA*1**TRUT**) BUF(101)=(0.5TAFT**CAYREF)*86400**COYCUT BUF(103)=CRBELA*(1)*CUL BUF(103)=CRBELA*(1)*CUL BUF(103)=CRBELA*(1)*CUL BUF(104+1)=ELEMST(1)*CUL DO 15 I=1*6 DO 26 I=4*6 DU (104+1)=EUEMST(1)*CUL BUF(104+1)=EUEMST(1)*CUL DRB1 BUF(104+1)=EUEMST(1)*CUL DRB1 BUF(104+1)=EUEMST(1)*CUL DRB1 DO 26 I=4*6 DRB1	73
BUF(34) =43.7300 C 34.74 PCUL **5 BUF(44) =+1.FC *CS(5.1) *CUL **5 CUT=1.SORT(AC **3/GW) BUF(80) =CD(1) BUF(81) =A SAT(1) *1.004 BUF(82) = MSAT(1) *1.003 IF (MMJON.GT.C.000) BUF(91) =1.000 OR81 IF (MSUN.GT.C.000) BUF(92) =1.000 CALL ELEM(ELL MST.CRBdLA.1TRUT.) BUF(101) =(0.STAFT+CAYREF) *864400.CO/CUT BUF(102) =CRBELA(1)/CUL BUF(103) =CRHELA(2) DPB1 BUF(104) = XNU DO 15 [=1.6 DO 20 1 = 4.6 DU (104+1) =ELEMST(1)/CUL DRB1 BUF(104+1) =EUF(104+1) *CUT BUF(111) =0.SORT(CCTPSC(BUF(105))) BUF(112) =0.SORT(CCTPSC(BUF(106))) DRB1 BUF(114) =CFEFLA(6)	74
CLT=LSQRT(AC * *3/GM) BLF(80) = CD(1) BLF(81) = ASAT(1) *1.004 BLF(81) = ASAT(1) *1.004 BLF(81) = ASAT(1) *1.003 IF (MMJON.GT.G.000) BUF(91) = 1.000 CRE1 IF (MSUN.GT.G.000) BUF(92) = 1.000 CALL BLEMBELL MST.GRBELA.1TRUT.) BLF(101) = (DSTAFT-CAYREF) *86466.CO/CUT BLF(102) = CRBELA(1)/CUL BUF(103) = CRBELA(2) BUF(104) = XNU DD 1S [=1.6 15 BLF(104+1) = ELEMST(1)/CUL DR B1 DO 2C 1 = 4.6 BUF(104+1) = BUF(104+1) *CUT BUF(111) = CSCRT(GCTPRG(BUF(105).BUF(105))) BUF(112) = CSCRT(GCTPRG(BUF(106).BUF(105))) BUF(114) = CFEFLA(6)	75
BUF(80) = CD(1)	76
BUF(80)=ASAT(1)*1.004 BUF(81)=ASAT(1)*1.003 IF (MMJON.GT.G.000) BUF(91)=1.000 OR81 IF (MSUN.GT.G.000) BUF(92)=1.000 CALL HELEM(ELLMST.GRBdLA.1TRUT.) BUF(101)=CSTAFT-DAYREF)*86460.DOVCUT BUF(103)=CRBELA(1)VCUL BUF(103)=CRBELA(2) DPB1 BUF(104)=XNU OO 15 [=1.6 IS BUF(104+1)=EUEMST(1)VCUL DR B1 DO 20 1=4.6 DB B1 BUF(104+1)=EUEMST(1)*CUT DC B1 BUF(111)=CSGRT(GCTPRC(BUF(105).BUF(105))) BUF(112)=CSGRT(GCTPRC(BUF(108).BUF(106))) DFB1 BUF(114)=CFEFLA(6)	77
### ##################################	7e
IF (MMJON.GT.G.000) BUF (91) = 1.000	79
IF (MSUN.GT.C.GDO)	έĊ
CALL BLEM(FLLMST,GRBGLA+1++TRUT+) BUF(101)=(DSTAFT+DAYREF)*86460+D0/C0T BUF(102)=CRBCLA(1)/CUL BUF(103)=CRBCLA(2) DPB1 BUF(104)=XNU DO 15 [=1+6 BUF(104+1)=EUEMST(1)/CUL DR 20 1=4+6 BUF(104+1)=EUF(104+1)*CUT BUF(111)=CSGCT(CCTPSC(BUF(105)+EUF(105))) BUF(112)=CSGCT(CCTPSC(BUF(106)+EUF(106))) BUF(114)=CFEFLA(6) DR 31 BUF(114)=CFEFLA(6)	21
### BUF(101)=(D STAFT-DAYREF) ##6400. DO/COT ###################################	£2
BUF(102)=CRBULA(1)/CUL BUF(103)=CRBULA(2) BUF(104)=XNU DO 15 [=1:6 BUF(104+1)=EUEMST(1)/CUL DO 20 1=4:6 BUF(104+1)=EUF(104+1)*CUT BUF(111)=CSOCT(CCTPCC(BUF(105)*EUF(105))) BUF(112)=CSOCT(CCTPCC(BUF(106)*EUF(106))) BUF(114)=CFEF LA(6)	
BUF(103)=CREELA(2) BUF(104)=XNU OD 15 [=1:6 BUF(104+1)=ELEMST(1)/CUL DR 0 20 1=4:6 BUF(104+1)=EUF(104+1)*CUT BUF(111)=CSORT(CCTPRC(BUF(105):EUF(105))) BUF(112)=CSORT(CCTPRC(BUF(106):EUF(106))) BUF(114)=CFEFLA(6) DP 0 1	64
BUF(134)=XNU OD 15 [=1:6 DFB1 DFB1 DFB1 DFB1 DFB1 DFB1 DFB1 DFB1	65
DO 15 [=1:6 15 BLF(104+1)=ELEMST(I)/CUL DO 20 1=4:6 20 BLF(104+1)=EUF(104+1) *CUT BUF(111)=CSCST(CCTPSC(BUF(105):EUF(105))) BUF(112)=CSCST(CCTPSC(BUF(108):EUF(108))) BUF(114)=CFEF LA(6) 2 DFB1 BUF(114)=CFEF LA(6)	86
15 BLF(104+1)=ELEMST(1)/CUL DD 20 1=4.6 20 BLF(104+1)=EUF(104+1)*CUT BUF(111)=CSCRT(CCTPRC(BUF(105)*EUF(105))) 3F81 BUF(112)=CSCRT(CCTPRC(BUF(108)*EUF(108))) 5F81 BUF(114)=CFFF LA(6) 2781	27
DO 20 1=4.6 DO 20 1=4.6 DO 20 1=4.6 DO EVERT OF THE STREET CONTROL (104+1) *CUT DUF(111)=CSCR T(COTPROL(BUF(105) . BUF(105))) DUF(112)=CSCR T(COTPROL(BUF(108) . BUF(108))) DUF(114)=CFEF LA(6) DEST	68
20 BUF(104+1)=BUF(104+1) *CUT BUF(111)=CSCGT(CCTPGC(BUF(105).BUF(105))) BUF(112)=CSCGT(CCTPGC(BUF(106).BUF(106))) BUF(114)=CFFF LA(6) 2881 2981 2981	29
### ##################################	SC
BUF(112)=DSGR T(DGTPHC (BUF(108) + EUF(108))) BUF(114)=CFFF LA(6) 3FB1	91
BUF(114)=CF FF LA(6)	92
BUT 1147+CT CATO	93
915(146)=C96(14(5)	ے ک
BUP(1107-cnt.chts)	95
BUF(11/7-040; EXIS)	96
BUT 1101-DEDICATO	
port 1237 mg t Hot 177 Hot 127	
BUF(121)=EC BUF(122)=FE FD DT(1) #CRAD *CUTZE+64 D4	
BUF(123)=#ANCCT(1) *CFAD*CUTZ6.64C4	
Burt 123/ The Resident Control of the Control of th	
BUF(124)=PFE(1) /CUT BUF(125)=PERHT(1) *1.CD3/CUL DRB1	
BUF(126)=APHT(1) *1. JD+3/CUL DRB1	
CALL ON IS S(CESAMITATATE CAYING SEC)	
1YE=IYMOVICCOD	
108=14W0710000 DP01	
100-11-10-11-10-10	
DEPRODUCIBILITY OF THE	
THEIHERIOS ORIGINAL PAGE IS POOR SEE	
IM=IH4-IH+ICC URIGINAL TION . DRG1	
BUF(151)=1YE - : DP81	

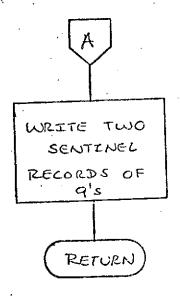
	·		•	•	•		
	BUF(192)=1ME					DRB1	112
•	BUF(193)=IDE					IBAC	113
	BtF(194)=1H					3 891	114
	BLF(195)=IM					DRB1	115
	BUF(196)=101NT(STC*1000.00+.500)				DPBI	116
	BLF(250)=2.00				· .	IBAC	117
C WRI	TE HEADER AND DATA RECORDS	•	•	·	;	DRB1	118
25	WF ITE (TOREI) BUF					DRBI	119
•	DO 28 1=1.350	*	:	· · .		1890	120
28	BUF(I)=C.CO .	•				DRBI	:21
C FILE	L RECORDS VITH-ELEMENTS UNTIL FU	LL				ORBI	122
30	SET, YAST, GMYT, 18RBC) 9A H AC LLAS	C)			•	DRB1	123
	BUF(1)=IYND				1	ORB1	124
	BUF(2)=IDAY	•				3R81	125
	BUF(3)=1880				f	DRB1	126
	BUF(4)=D7	*			;	DPB1	127
	IB L=1		•	:	•	DRB1	128
40	00 50 7=1.6			•		3281	129
50	ESIF(1.180F)=XYZEND(1)*1.0-3					១៩៩1	130
-	IF (DORBI.GE.DORBIE) GO TO 60		•		' :	1890	131
	DAYO=DOREI			•		1 BRC	132
	DORB1=DCRB1+ORB1RT	•			1	0831	133
•	CALL ORUIT(DORBI)			•		DRB 1	134
	18 LF = 19 LF +1			٠.	•	1690	135
	IF(IBUF +LE+SC) GC TO 40				•	1890	136
	GD TO 25	•			1	DRBI	137
C WF 1	TE LAST RECORD				:	1890	138
14 ISQ 13	FIF GUESALWASON GC TO 80					3PB1	139
	NR 1TE (TERBI 16 UF		·			DEB 1	140
	IB(F=1 .	_				DR91	141
	£0 70·1=1.8	•		•) RBI	142
70	BUF(1)=NINES				• ;	1880	143
C TER	MINATA TAPE WITH 915		•		:	DPB1	144
80	DO 90 I=1.6 .	•			1	0F81	145
90	COLF(1, IDUF)=NINES				;	1880	146
	WRITH(TCRBI)EUF					3 P31	147
	WRITE(TORBI)(NINUS:1=1:350)				•	0F31	148
	WRITE(TERB1)(NINIS:1=1:350)				;	5 091	149
	ENDFILE TORBL				;	ORB1	150
	NF ILES=NF ILES+1	¥				JAB1	151
	RRINT 100.NFILES.TORB1		•		;	1890	152
	CALL ERROR(10 NINES)				,	ORBI	153
	RETURN					1 BRC	
100	FORMATCIHI.20x. FOR THE ARC JUS					1890	155
	. 23X. SUCCESSFULLY WRITTEN ON	FILE**14**	OF UNIT*	• 13•1H•/	3	DRB1	156
	END					JFB1	157





ORB1
Page 5 of 5
October 1972





8.0-.364